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ABSTRACT

The premise behind this document is that a generation gap is opening between 8-year-olds and 16-year-olds in terms of technological respect, ease of hardware usage, and understanding of process tools. Therefore, this publication seeks to develop awareness and skills with data bases, computer graphics, programming, spreadsheets, simulations, problem solving, computer-assisted instruction, and other computer uses in mathematics and science in the early elementary grades. Teachers from five school systems in Tennessee explored appropriate hardware and software to develop technology-based learning as an integrated part of the elementary school classroom environment. Science and mathematics software was field-tested in 31 classrooms in kindergarten and grades 1-3. More than 100 pieces of software were reviewed, using 12 criteria. The reviews include title, publisher, price, summary of curriculum recommendations, intended use, how to load and command functions, curriculum possibilities, and learning center activities. Information on related teacher inservice activities and learning centers is included. Sections then concern science software reviews with and without curriculum activities and mathematics software reviews with and without curriculum activities. A listing of software paralleling the goals and strands of Tennessee's "Basic Skills First Curriculum Guides" is included. (MNS)

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SPINOFFS
Mathematics & Science Computer Learning Experiences

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SPINOFFS

Mathematics and Science Computer Learning Experiences

By

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Dr. Douglas Simpson, Dean of the School of Education and Dr. Richard Renfro, Assistant Dean, supported the SPIN Project in its inception and throughout the inservice conference planning for which **SPINOFFS** was written.

We appreciate the continuing assistance provided by Roxie Wright, who managed the printing of **SPINOFFS**.

TABLE OF CONTENTS

Page

I. Preface 1

II. Introduction 5

III. Integrating the Microcomputer Into the Curriculum 9

IV. SPIN Project Participants 10

V. SPIN Project Field-Site Review Form 13

VI. The Business, Youngsters, Technology, and Education Consortium 15

VII. Inservice Courses 16

VIII. Teacher's Involvement Form 19

IX. Learning Centers 21

  A. Introduction
  B. Learning Center Activities
  C. Opportunities
  D. Considerations

X. Software Reviews and Curriculum Activities 25

  A. Science 26

    Bones and Muscles 27
    Creative Contraptions 30
    Estimation 33
    Fantastic Animals 36
    The Incredible Laboratory 39
    Stickybear Opposites 42

  B. Mathematics 44

    Challenge Math 45
    Early Games 48
    Fraction Factory 52
    Fay: That Math Woman 55
    Patterns and Sequence 57
    Size and Logic 59
    Stickers 61
    Stickybear Numbers 63
    Stickybear Shapes 65

  C. Word Processing 67

    Magic Slate: The Word Processor That Grows With You 68
    Picture Book Fun: Pond, Pets, and Chicks 70

XI. Software Reviews 73

A. Science 74

Animal Kingdom 75
Animal Photo Fun 76
Creative Play: Problem Solving Activities with the Computer 77
Discrimination, Attributes, and Rules 79
Electronic Easel 80
Energy Who? 81
Exploring Your World: You and Weather 82
The Human Body: An Overview 83
Memory: The First Step in Problem Solving 84
Mickey's Space Adventure 85
Now Hear This 88
Picture Book Fun: Farms and Gardens 89
Picture Book Fun: Transportation 91
T-Rex: The Dinosaur Survival Adventure 93
Weather 94

B. Mathematics 95

Builder 96
Bumble Games 98
Counters: An Active Approach to Counting and Arithmetic 100
Easy Graph 101
Money! Money! 102
My Very Own Calendar 103
Odd One Out 105
Piece of Cake Math 107

XII. Curriculum Goals and Objectives 108

XIII. Basic Skills First 109

XIV. Basic Skills and Computer Learning 120

PREFACE

SPINOFFS is dedicated to teachers of young elementary school children. Engaging children in the learning process is one of the most challenging and rewarding aspects of educational leadership. Classroom leadership must adapt to economic and social changes at a rapid pace during the early grades to prepare children for the next and future decades.

> **ONE COULD PREDICT THAT THERE WILL SOON BE (OR THAT THERE IS CURRENTLY) A GENERATION GAP BETWEEN EIGHT YEAR OLDS AND SIXTEEN YEAR OLDS IN TERMS OF TECHNOLOGICAL RESPECT, EASE OF HARDWARE USAGE, AND UNDERSTANDING OF PROCESS TOOLS.**

Technology is playing a key role in national and international decision making. Educational and career opportunities are closely related. Thus, the educational process must respond to technological forces through enabling children's integration of computers, robots, video disks, laser printers and other hardware into the curriculum.

Data bases, computer graphics, programming languages, spread sheets, and simulation and problem solving software will serve as tools for the current elementary school generation to plan, organize, and analyze various functional responses within their everyday work and home environment. Also, computer assisted software will change the format for the acquisition of factual information in classrooms of the future. One could predict that there will soon be (or that there is currently) a generation gap between eight year olds and sixteen year olds in terms of technological respect, ease of hardware useage, and understanding of process tools.

Within the disciplines of mathematics and science, as we know them today, the impact of technology on learning will be paramount. Already, evidence suggests that technology is eroding traditional discipline boundaries by allowing children to solve problems through natural inquiry experiences. Static parameters of discipline categories as organizers are not required. Consider the problem of discovering a whales location during a computer simulated navigation experience. Geography, geophysics, physics, computation, algebraic formulas, and geometric principals are all incorporated. Children as early as the fourth-grade may now engage in inquiry through programming, model building, and simulation tool software as do adult scientists working on the same problem.

AS TEACHERS, HOW DO WE STIMULATE THE MOTIVATION, THE SKILLS, AND THE INQUIRY PROCESS NECESSARY TO MANAGE THE HEIGHTENED VISUAL ARRAY OF TECHNOLOGICAL SYSTEMS, REPRESENTATIONS, AND INTEGRATION OF MASSIVE INFORMATION STORAGE?

The melting of discipline and knowledge boundaries, while focusing on the learning process, is inherent as problem solving becomes more global and more complex. As teachers, how do we stimulate the motivation, the skills, and the inquiry process necessary to manage the heightened visual array of technological systems, representations, and integration of massive information storage? This is expecially difficult since we, as teachers, have not grown up with or had the opportunity to be retrained using these new tools. Of course, we can never go back and learn about these tools with the same ease as students who perceive technological devices as natural tools in their everyday environment, which can be leisure, work, or education enhancements.

In Tennessee, teachers from five school systems are exploring the most appropriate hardware and software to develop technology-based learning as an integrated part of the elementary school classroom environment. These teachers have accepted various ideas and social trends related to integrating technology based learning experiences into the curriculum for young children. These are:

1. A piece of equipment does not revolutionize learning.
2. Learning occurs in the same way in elementary school classrooms with computers, robots, etc. as it does in those without these technnological devices (discovery, experimentation, and manipulation of information by the learner).
3. Many hypothesize that our standard of living will be tied to computers (ability to utilize to solve problems beyond data entry and general processing) in the 21st century.
4. Research reports a developing gap between low-income and affluent children's access to awareness and literacy of computers due to home computer use. Thus, it is important for computers to be integrated into the elementary classrooms with routine use for all children.
5. Children will hold four jobs in their lifetime, three of which currently do not exist, and will most likely be tied to the information "sector."

The School Personnel Institute Network (SPIN) Project teachers and staff are basing computer integration and inservice training on sound educational theories and principles. Through appropriate adult involvement, curricula methods, and software; we can present knowledge using computer experiences to young children. Appropriate presentation would involve engaging the learner as the control over the learning process and the technological devices involved. The teacher would serve as a co-learner and as a facilitator during the inquiry process which has been designed by the teacher. Of course, the activities and experiences would be:

1. rich in goals appropriate to the students developmental level
2. designed to present ideas that extend the values which we accept as important to understand
3. closely linked with instructional objectives through the software and adult collaborators involvement
4. designed to allow the teacher to present, reinforce, or extend information in a manner made possible through the new technology and to have available a tool to increase the individual student's access to information or to learning assistance
5. based on and build on our current developmental research/theory about how we learn and how to teach

Introduction of the computer at an early age provides an optimal time for learning a new language such as LOGO. The memory traces are open to concepts presented in language learning. The early educational years provide an essential time to promote reasoning and learning to think about the thinking process. Learning to approach problems through alternative solutions and teaching a child to plan to solve problems through open exploration and experimentation is important. Teachers need to be problem solvers and to teach children to collaborate to reach solutions as well as to work alone. Children are interested in computers just like reading. It is important to catch them at the concrete exploration stage.

SPINOFFS emerged from field testing software in kindergarten, first, second, and third grade classrooms in Tennessee. **SPINOFFS** focuses on science and mathematics software of appropriate quality for kindergarten and the lower elementary school grades.

> **DURING A TIME WHEN CONCRETE UNDERSTANDING IS EXTREMELY IMPORTANT, TECHNOLOGY CAN BE BEST INTEGRATED WITHIN CLASSROOMS AS A NATURAL TOOL FOR LEARNING.**

The curriculum resource, **SPINOFFS**, in conjunction with inservice training, is intended to enhance science and mathematics and computer learning as well as instruction. Student's motivation, skills, and values are established very early in relation to these disciplines. Therefore, **SPINOFFS** is directed towards the earliest formal academic levels. During a time when concrete understanding is extremely important, technology can be best integrated within classrooms as a natural tool for learning.

Barbara A. Nye, Ph.D.
Executive Director
Business, Youngsters, Technology and Education Consortium

INTRODUCTION

The **SPINOFFS** curriculum resource material resulted from two important projects in Tennessee. The School Personnel Institute Network (SPIN) Project involves Gibson and Sumner County School Systems, one independent school, The University School of Nashville (USN), and two other public school systems, Paris Special School District and Washington County School System. Selected teachers within these systems are receiving inservice training while field testing science and mathematics software in their classrooms. The **SPIN Project** is funded by the Tennessee Higher Education Commission through the Economic Security Grant Act. The project is being conducted by the School of Education at Tennessee State University. The Business, Youngsters, Technology and Education Consortium and the Tennessee School Boards Association are providing assistance to the Project.

The SPIN Project objectives are:

1. to identify strategies to enhance mathematics and science instruction through the appropriate use of computers in kindergarten, first, second, and third grade classrooms in Tennessee

2. to field test over 100 selected Apple and Commodore software programs with kindergarten through third grade teachers and students in Tennessee

3. to train field site teachers to evaluate software and utilize it effectively in their classrooms by making use of the computer as an instructional tool

4. to develop and offer quality inservice training for Tennessee teachers during professional conferences

5. to develop and provide instructional resource material which includes sample software reviews with curriculum activities which permit teachers to incorporate computers into their daily classroom instruction to enhance the science, mathematics, and computer learning curriculum

The **B.Y.T.E. An Apple A Day Project** is one of 15 national research grants being supported through an equipment donation from the Apple Education Foundation. Six kindergarten and six first-grade teachers within the Gibson and Sumner County school systems and some 300 children are involved in research to determine how the integration of computers into the classroom and curriculum can facilitate spatial-temporal learning. Space and time constructs relate directly to reading, mathematics, and science skills and concepts. The Tennessee project is the only early elementary project being conducted under the 1985-87 cycle of Apple Foundation grant programs. The Business, Youngsters, Technology and Education Consortium is administering the project.

SPINOFFS is organized as a reference guide on software which has been field tested in Tennessee classrooms. Determining the appropriate grade level and developing strategies to integrate the software and the computer require careful planning.

The SPIN Project, through the Business, Youngsters, Technology and Education (B.Y.T.E.) Consortium, placed one or two computers in each of 13 kindergartens, 10 first, 4 second, and 4 third grade project classrooms. Some computers were provided under a grant from Commodore Business Machines. The Commodore equipment grant to the Consortium is entitled, Computer Appropriate Resources in Education, Project CARE. Other computers as mentioned above were placed through the equipment grant from the Apple Foundation.

The teachers in the 31 classrooms were trained to evaluate software, integrate it into the daily classroom schedule, and manage the computer as a learning tool for all students. Importantly, from their own experience, the teachers developed curriculum experiences to introduce or extend the software application as a new or enhanced learning opportunity. Each school system also involved instructional supervisors and principals in the SPIN Project. Graduate credit in microcomputer integration in the elementary school was provided by Tennessee State University.

Software Review Process:

The software listed in **SPINOFFS** was carefully selected to meet the majority or all of the criteria included in the teacher training. The evaluation instrument included a number of criteria within each of these categories:

a) accuracy
b) effectiveness
c) interactive quality with user
d) attractiveness
e) appropriateness
f) special features
g) breadth of use
h) powerful learning features
i) playful and motivational
j) worthy socially and educationally
k) educationally sound
l) ease of use.

More than 100 pieces of software were reviewed. Some software use was rejected due to: a) the inaccuracy of the software's feedback, b) the ethical representations, c) the lack of challenge, d) the lack of contribution of a new or better way to present information or concepts, e) the stressful impact on the student, f) the poor quality of the graphics or text screens, g) the difficulty of use for the teacher or students in the classroom, or h) the lack of student appeal.

SPINOFFS software reviews and curriculum examples include:

Software Title

Publisher

Price (as of March, 1986)

Summary by the reviewers with curriculum recommendations

Intended Use - what age level use the publisher and the reviewers (the teachers and the project staff) recommend and what classroom management is recommended. This section includes the minimum length of time that is appropriate to explore the software or whether one or two children at once can use the software, along with the appropriateness for small group experiences. Cooperative use promotes language development, problem solving, and social skills. Cooperative use can reduce teacher interruptions due to peer assistance. The time segments are provided as guidance. The recommended time segments are based on the assumption that only one or two computers are available in a classroom of 20-30 students and that the students are ages five to eight.

How To Load and Command Functions - These sections provide the obvious information only. Teachers must refer to the individual software documentation for further information or clarification.

Curriculum Possibilities - Computer use has to be integrated into the curriculum and classroom for optimum access and use as a learning tool. Suggestions by the publisher and the reviewers focus on accomplishing this task.

Learning Center Activities - Concrete learning experiences to introduce, reinforce, or expand computer use are included. This feature of curriculum planning to promote science, mathematics, and computer learning concepts is very important.

Teacher Training cannot be addressed adequately in written materials. Both the B.Y.T.E. An Apple A Day and SPIN projects involve high quality inservice opportunities. The B.Y.T.E. An Apple A Day Project will include a publication on teacher training and important inservice characteristics.

Producing **SPINOFFS** and conducting the SPIN Project has been an enjoyable endeavor. The process of engaging teachers as learners as they engaged students brought the appropriate use of technology into the classrooms of some 800 young elementary school children in Tennessee. Inservice training workshops will involve an additional 300-500 teachers and potentially affect an additional 9,000-15,000 students. **Technological integration is certainly more than computers and software. It is a teacher's mindset and skills used to enhance the curriculum. These technological tools have the potential to expand or provide new ways to make predictions, solve problems, explore information, and fully engage the learner in the inquiry process.**

The B.Y.T.E. Consortium plans to revise and update curriculum resources with additional software reviews and curriculum activities. The Consortium will add new dimensions such as effective word processing activities for the early grades, how to integrate robots as learning devices, and expand the subject areas for which software reviews are provided in a future curriculum guide.

We look forward to receiving your suggestions for software review and curriculum ideas. Please let us know how we can add to your resources as educational leaders. This process is important during the formative years of schooling and the developmental phase of educational technology.

Barbara A. Nye, Ph.D.
Director
The School Personnel Institute Network

INTEGRATING THE MICROCOMPUTER INTO THE CURRICULUM

1. Form an interested committee (school, university, parents, and community resource persons)
2. Generally outline the issues and goals
3. Decide which objectives the microcomputer can best support
4. Develop the objectives by integrating the microcomputer
5. Determine a microcomputer activity for each objective
6. Decide on the level of curriculum infusion of the microcomputer (once a week per child, one unit per year per subject area, one unit per month eventually covering all areas)
7. Refer to SPINOFFS for software resources and examine additional programs
8. Plan the long-term integration of technology
9. Develop hardware purchase, loan, fund raising, and room sharing strategies
10. Start with teacher and principal training before software selection or computer placement in the classroom (identify trainers with grade level experience in which the microcomputer is being integrated)
11. Consider equity as a major issue - provide computer use for all students
12. Consider the ethics of the software first (values, stress production, range of application)
13. Involve classroom computer volunteers during phase one of computer integration (make sure the volunteers are trained prior to classroom involvement)
14. Allow teachers to visit classrooms where computers are being used appropriately
15. Evaluate the success of the first year of microcomputer integration informally with the full intention of making revisions (Involve the children in the evaluation process)

A SPECIAL THANKS TO

The B.Y.T.E. An Apple A Day Project and
The School Personnel Institute Network Project
Field-Test Sites Personnel

Gibson County School System is located in Gibson County in the northwest part of Tennessee. The system serves about 1900 students in six schools.

Bill Carey, Superintendent
B.Y.T.E. Consortium Board Member

Sandra Harper, Supervisor of Instruction

Lynn Tucker, Principal
Dyer Elementary School

Linda Paschall, Kindergarten Teacher
Martha Phelan, Kindergarten Teacher
Kay Tignor, First Grade Teacher
Karen Roberts, First Grade Teacher
Judy Barron, Second Grade Teacher
Sandra Carey, Special Education

Calvin Bailey, Principal
Medina Elementary School

Fay Campbell, Kindergarten Teacher
Wanda Darby, First Grade Teacher

James Orr, Principal
Rutherford Elementary School

Brenda Brooks, Kindergarten Teacher
Joan Taylor, First Grade Teacher
Deloris Wilson, Special Education Teacher

Tommy Walters, Principal
Spring Hill Elementary School

Mary Leach, Kindergarten Teacher

Richard Binkley, Principal
Yorkville Elementary School

Amy Devaney, Kindergarten-First Grade Teacher

Paris Special School District is located in Paris, Tennessee in the western part of Tennessee. The system serves 1350 students in three schools.

Julian Brewer, Superintendent

Keith Chilcutt, Principal
Atkins-Porter Elementary School

Fran Jenkins, Kindergarten Teacher
Judy Hooper, First Grade Teacher
Jan Darby, Second Grade Teacher
Jane Cuthbertson, Third Grade Teacher

Sumner County School System is located in the north central part of Tennessee. The system serves 18,452 students in 31 schools.

Benny Bills, Superintendent

Charles Wright, Director of Instruction

Gary Holt, Educational Media Specialist

Tom Hughes, Principal
Howard Elementary School (Gallatin)

Dr. Brenda Valentine, Kindergarten Teacher

Judy Nath, Principal
Walton Ferry Elementary School (Hendersonville)

Terry Cawthon, Kindergarten Teacher
Sharon Watson, First Grade Teacher

Jimmy Brown, Principal
Westmoreland Elementary School (Westmoreland)

Barbara Byerley, Kindergarten Teacher

University School of Nashville is located near downtown Nashville, Tennessee. It is an independent school serving 680 students, kindergarten through twelfth grade.

Harvey Sperling, Director

Mary Emily Taylor, Head of the Lower School
Bill Rodriguez, Science and Computer Teacher

Debbie Roth, Kindergarten Teacher
Ellen Dickinson, First Grade Teacher
Jan Maier, Second Grade Teacher
Mary Ann Pangle, Third Grade Teacher

Washington County School System is located in the northeastern part of Tennessee. The system serves 8,857 students in fourteen schools.

John McKinney, Superintendent

Dr. Christine Ejlali, Assistant Superintendent

Reece Jamerson, Principal
Boones Creek Elementary School

Pamela Sue Johnson, Kindergarten Teacher
Reba Durham, First Grade Teacher
Carolyn Hodges, Second Grade Teacher
Stella McKee, Third Grade Teacher

Earl Henley, Principal
Westview Elementary School

Patsy Greene, Kindergarten Teacher
Aldaree Young, First Grade Teacher
Carolyn Madden, First Grade Teacher
Ruth West, Second Grade Teacher
Teresa Moore, Third Grade Teacher
Nancy Gillis, Third Grade Teacher
Christena Walters, Resource Teacher

SCHOOL PERSONEL INSTITUTE NETWORK (SPIN)
FIELD TEST SITE
SOFTWARE REVIEW FORM

TEACHER:______________________________________ SCHOOL:________________________

GRADE LEVEL:_______________ COMPUTER BRAND IN USE:____________________________

ESTIMATED NUMBER OF STUDENTS WHO USED THIS SOFTWARE:__________________

TITLE OF SOFTWARE:____

PUBLISHER:____

SOFTWARE TYPE:____________Diskette ____________Cartridge

PERIPHERAL NEEDED:__________Joystick _____________Speech Synthesizer

BASED UPON THE REVIEW YOU AND YOUR STUDENTS HAVE MADE:

1. Would you like to have this software available for your classroom?

_________Yes _________No

2. Would you like to have this software available for your school?

_________Yes _________No

3. What grade levels of students could benefit from this software?

K 1 2 3 4 5 6 (circle)

4. What subject area could this software introduce, enhance, or reinforce?

_____math _____science _____social studies _____language arts

_____health _____art

5. What skill objectives does the software best support?

a.

b.

c.

6. What special features does this software have in your opinion.

_____good materials to plan lessons

_____easy to use

_____clear instruction guide

_____good sound quality

_____printing capability

_____can save to another disk

_____can access program after removing the software

_____good feedback (pleasant, exciting, clear)

_____clear menu

_____clear screen directions

_____good screen graphics (attractive, non-violent, clear)

6. Did the software hold the children's interest?

________Yes ________No

7. Did you think the software helped some children learn the information provided? _________Yes ________No

8. Other comments:

9. What curriculum activities did you do to prepare the children for the software or to extend the material on the software? Describe these activities or check here if none ________.

THANK YOU FOR USING YOUR PROFESSIONAL JUDGEMENT TO HELP SELECT HIGH QUALITY SOFTWARE.

Center for Training and
Technical Assistance
Tennessee State University

BUSINESS, YOUNGSTERS, TECHNOLOGY, AND EDUCATION CONSORTIUM

DESCRIPTION, PROJECTS, AND BOARD MEMBERS

BUSINESS, YOUNGSTERS, TECHNOLOGY,
AND EDUCATION CONSORTIUM

The Business, Youngsters, Technology, and Education Consortium (B.Y.T.E.)

The Business, Youngsters, Technology, and Education Consortium is a public service non-profit organization within the Tennessee State University Foundation. The B.Y.T.E. Consortium unites business and education interests for the improvement of education through the appropriate use of technology.

The programs and projects supported by the B.Y.T.E. Consortium are administered through the Center for Training and Technical Assistance of the School of Education at Tennessee State University. The B.Y.T.E. Consortium, through donations and grants made to the Tennessee State University Foundation, offers project services such as teacher, parent, and administrator training, child enrichment classes, research, conferences, and technical assistance through a variety of public-private partnership programs in the area of technology and learning. Some of the Consortium's current programs and projects include:

Project B.Y.T.E.—to train pre-school staff in the use of computers, particularly for low-income or developmentally delayed children (began 1982)

B.Y.T.E. An Apple A Day—a research and curriculum development project for kindergarten and first grade students in rural settings which includes a parent/home loan program (began 1985)

School Personnel Inservice Network (SPIN)—to provide training for public and private school teachers on integrating computer experiences in math and science in K-3 classrooms (began 1985)

B.Y.T.E. Commodore Resources in Education with States (CREWS)—Tennessee—to develop a teacher training model which will contribute to the development of a resource network on technology and education (began 1985)

Computer Appropriate Resources in Early Education (CARE)—to develop educational computing curriculum appropriate for young children featuring teacher as well as parent volunteer training (began 1985)

Technology and learning curriculum at Tennessee State University—a series of courses to enhance the pre-service and in-service teacher training program (began 1984)

Technical assistance to colleges, universities, and agencies on technology and learning programs—to develop programs and conferences in improve teacher training and continuing education for teachers on integrating technology with the curriculum (began 1984)

Microcomputers at School, Home, and Work—a series of community service workshops on computer literacy, word processing, software evaluation, and computer experiences for children (began 1984)

The Consortium is guided by a national Board of Advisors from business, education, government, human service, and volunteer organizations. These individuals advise on implementation of technology and learning projects, review and suggest research, evaluate curriculum, and develop strategies for dissemination of information about technology and education. The distinguished members of this Board are:

Dr. Kay Albrecht
Director, Program Development and Training
Daybridge Learning Centers

Dr. Barbara T. Bowman
Director of Graduate Studies
Erikson Institute

Dr. Betty Caldwell
President of National Association for the Education of Young Children

Mr. Bill Carey
Superintendent
Gibson County School System

Mr. Gene Cheatham
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State Board of Regents

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Administration for Children, Youth, and Families, Region IV

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Director, Head Start Program
Chattanooga City Schools

BUSINESS, YOUNGSTERS, TECHNOLOGY, AND EDUCATION

INSERVICE COURSES

The B.Y.T.E. Consortium sponsors inservice training workshops and courses through the Center for Training and Technical Assistance. The courses and semester credit equivalents are listed below. These inservice opportunities are usually scheduled on-site in a central location for the school system.

Undergraduate and Graduate 3-hour credit courses in Curriculum and Instruction

EDCI 417 **Non-traditional Educational Uses of Microcomputers**
EDCI 617 **Non-traditional Educational Uses of Microcomputers**

The parent's role in selection of hardware and software is important as well as the parent's guidance of the child's use of microcomputers. This course will address home computer use including readiness skills, basic skills, tutoring, programming languages, and the use of games. The course includes hands-on experience, a project with a child, and parental issues. No previous computer experience is necessary (EDCI 617, the graduate level course, has additional requirements.)

EDCI 418 **Young Children and Microcomputer Technology**
EDCI 618 **Microcomputer Technology in Primary and Elementary Schools**

Specific theories and methods apply to the integration of microcomputers into the curriculum for young children. Selection of the computer languages, software evaluation, and classroom management are key planning issues. The role of the microcomputer and technology will be the focus of this course on current and future uses of microcomputers in home and educational settings. Lectures, discussion, and demonstrations in early childhood classes will be supplemented by hands-on learning and teaching experiences with microcomputers. (EDCI 618, the graduate level course, has additional requirements.)

EDCI 419 **Technology and the Schools**
EDCI 619 **Microcomputers and Educational Services**

This course is designed for teachers and program administrators with limited or no experience with microcomputers. The course will cover major educational issues and uses of microcomputers along with guidelines for software and hardware evaluation and selection. This is a hands-on course in the operation of microcomputers and directing inservice for teachers. The course is specifically designed to address computer education needs of teachers in early childhood, elementary, and middle school levels including corporate and parental involvement strategies. (EDCI 619, the graduate level course has additional requirements.)

EDCI 420 **Introduction to Word Processing in the Elementary Classrooms**
EDCI 620 **Instructional Applications of Word Processing**

This course will explore issues and techniques for using word processing appropriately in the elementary grades. Appropriate software will be used in this hands-on tutorial course. The students will learn how to create, edit, save, and print documents while working with children, and on personal correspondence, reports, and technical papers. No previous experience with computers is necessary. (EDCI 620, the graduate level course, has additional requirements.)

EDCI 484 **Microcomputers in Special Education and Rehabilitation**
EDCI 684 **Microcomputers in Special Education and Rehabilitation**

Major educational issues in an in-depth study of microcomputer instruction with special needs individuals will be addressed in this course. Computer assisted assessment, computer managed instruction, and computer assisted instruction will be explored. Methods such as teaching reading to deaf students will be included in this course. No previous computer experience required. (EDCI 684, the graduate level course, has additional requirements.)

TEACHER INVOLVEMENT

WE WELCOME YOUR INVOLVEMENT AS WE PREPARE CURRICULUM RESOURCES

PLEASE SEND SOFTWARE REVIEW RECOMMENDATIONS:

Software Title:
Publisher:
Address:

COMPUTER-RELATED MATERIALS REFERENCES

Title:
Author:
Publisher:

CURRICULUM POSSIBILITIES:

Projects:
Activities:
Samples of Children's Work:

REQUESTS FOR INSERVICE TRAINING

School System or School Name:
Contact Person:
Address:
Phone Number:

Send to: **Dr. Barbara Nye, Executive Director**
B.Y.T.E. Consortium
School of Education
Tennessee State University
10th and Charlotte
Nashville, TN 37203

(615) 251-1540

LEARNING CENTERS

INTRODUCTION, OPPORTUNITIES, AND CONSIDERATIONS

LEARNING CENTERS

The learning center provides an excellent way to manage the microcomputer(s) in a classroom. All children can work successfully either individually, with a partner, or in a small group during each week.

Learning center activities can be changed based on skill objectives, unit themes, and the children's or teacher's interest or a volunteer's expertise.

Listed on the next two pages are some **opportunities** which learning centers provide and some **considerations** for establishing learning centers in a classroom. In the next section of **SPINOFFS**, the software reviews are divided by subject area (mathematics, science, and word processing). Listed below are the titles of the software for which learning center procedures and materials are discussed. Note that these are written in teacher training format. Only one to three children could work in the interest center at one time.

LEARNING CENTER ACTIVITIES

		Pages
Early Games	Kindergarten - Mathematics	48-51
Estimation	Kindergarten - Science	33-35
Fay, That Math Woman	First Grade - Mathematics	55-56
Fantastic Animals	First Grade - Science	36-38
Challenge Math	Second Grade - Mathematics	45-47
Creative Contraptions	Second Grade - Science	30-32
Fraction Factory	Third Grade - Mathematics	52-54
Bones and Muscles	Third Grade - Science	27-29
Pond, Pets, and Chicks	Kindergarten/First Grade - Word Processing	70-72
Magic Slate/	Second/Third Grade -	68-69
Incredible Laboratory	Word Processing	39-41

LEARNING CENTERS

Learning Centers Provide Opportunities:

1. for a child to make choices
2. for discovery learning through direct personal experience
3. to build self-confidence and competence as a result of learning skills
4. to enlarge vocabulary and to develop skills in communicating ideas through creative use of language, materials, and equipment
5. for imaginative dramatic play
6. to learn to think and to practice problem-solving by using a variety of materials
7. to develop physical skills of coordination and manipulation
8. to develop socially as children learn to relate to others
9. to share and be a responsible group member
10. to use and care for materials and equipment
11. to complete tasks and to plan group projects
12. to discover and expand the learning of specific information relating to a subject

LEARNING CENTER CONSIDERATIONS

1. Space (floor, table, display, storage)
2. Light, Ventilation, Temperature
3. Exits, Entrances, Traffic Patterns
4. Number of children, their interests, abilities, and needs
5. Availability of sturdy, safe, multi-purpose equipment and materials
6. Size of budget for additions to basic equipment
7. Number of staff (permanent and volunteer)
8. Length of school day, program services offered, size and form of physical plant
9. Availability of extended classroom space such as gym, park, or outdoor yard
10. Flexibility of staff

SOFTWARE REVIEWS

AND

CURRICULUM ACTIVITIES

SCIENCE SOFTWARE
WITH CURRICULUM ACTIVITIES

SOFTWARE TITLE: Bones and Muscles: A Team To Depend On

PUBLISHER: Marshware
P. O. BOX 8082
Shawnee Mission, KS 66208

PRICE: $39.95

SUMMARY:

Bones and Muscles is one of four disks in the Body Systems Series. Each can be used alone or in conjunction with the Marsh filmstrip series. Bones and Muscles emphasizes the working relationship between of bones, which provide support, and muscles, which allow movement. "Femur" narrates each colorful, animated lesson. The student has an opportunity to learn new vocabulary words and definitions, review a lesson about bones and/or muscles, and complete a quiz about the material. There is a Teacher Management System which allows the teacher to keep records on the progress of each student.

INTENDED USE:

Publisher Recommends:
Reviewer Recommends: Third - Fifth Grade
An individual student, pairs, or small groups may explore the program in 15 - 45 minute segments.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert the disk and close door. 2. Turn on the computer and the monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:

Press Open Apple, CTRL, and Reset to go to the beginning of the program.

COMMAND FUNCTIONS:

Press the "!" to access the Teacher Management System.

CURRICULUM POSSIBILITIES:

Publisher Recommends:

1. Bring a skeleton model into the classroom for the students to study.

2. If mentioning dinosaurs sparks interest, take your class to a museum. If this is not possible, try to locate some animal bones for the students to study.

3. X-rays could be used to demonstrate how broken bones heal.

4. On a large sheet of paper, trace each child's body. Children can then draw in the various organs.

5. Provide a full-length mirror to help children learn the various locations

of their organs. You could perhaps mark some of these on the mirror at the average height of your class.

6. The Body Systems Series could lead to a number of discussions in the Physical Education classes: care of the body through exercise, cardiovascular rates, exercises for specific muscles.

Reviewer Recommends:

1. Have the students put together a puzzle on the bones and muscles of the body. One example is available from Discovery Corner, Lawrence Hall of Science, University of California, Berkeley, CA, 94720 for $23.00.

LEARNING CENTER ACTIVITY   THIRD GRADE - SCIENCE

PROCEDURES FOR TODAY'S ACTIVITY:

1. Move to the **BONES AND MUSCLES** learning center. There can be no more than five people in each center.

2. Load the software according to the instructions given.

3. Explore the software with the other members on your team.

4. **CHALLENGES:**

   Take apart and put together the puzzle on bones, muscles, and organs.

   With a team member, make a list of the parts of the body which have joints.

MATERIALS NEEDED:

Puzzle of body parts, muscles, and bones
Paper for listing the joints

POSSIBLE DECORATION FOR THE LEARNING CENTER:

Poster of a skeleton (or small replica)

mobile with bones (paper)

SOFTWARE TITLE: Creative Contraptions

PUBLISHER: Bantam Electronic Publishing
666 Fifth Ave.
New York, NY 10103

PRICE: $29.96

SUMMARY:

Creative Contraptions gives the students many opportunities to use simple machines such as a lever, wedge, screw, pulley, wheel and axle, and inclined plane, and tools such as springs, pendulums, and magnets to make new contraptions. The student has the option of skill levels — apprentice or master builder. Review Mechanisms shows each mechanism used in creating the contraptions and gives a description of how each one operates. Fill in Mechanisms has the student fill in the correct mechanisms to make the contraption work. In Fill in Zany Objects, the student decides which zany objects will make the contraption work. Contraption Mix-up has the student replace both mechanisms and zany objects to make a contraption work. This activity also has a race against a time clock to complete the contraption. All activities promote logical thinking and deduction skills in order to make the contraption function properly.

INTENDED USE:

Publisher recommends:	ages 7 and up
Reviewer recommends:	ages 7 and up An individual child, a pair or small groups of children may explore the program in 15 minute — 1 hour segments.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door. 2. Turn on computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:

Press the [ESCAPE] key.

COMMAND FUNCTIONS:

1. At the beginning of the game press Y for Sound, N for no sound. During the game, the "S" key turns on and off the sound.
2. Instructions on the screen will tell the student to turn the diskette over to side 2. Once that is done, press RETURN to restart the program.
3. The arrow keys or the letters keys J,K,I, or M cycle through the options.
4. The RETURN key selects a part of menu choice.
5. The SPACE BAR runs the contraption made.

CURRICULUM POSSIBILITIES:

The reviewer recommends:

1. Use clothes pins and assorted objects to create contraptions.
2. Design art projects building contraptions.
3. Research and prepare a written report on a contraption and the mechanisms which make it work.
4. Provide materials for the students to prepare a story about a contraption which one student or the group created on the computer; include illustrations for the story. The text could be done on a word processor.
5. Ask open-ended questions that promote inquiry and reasoning skills.

LEARNING CENTER ACTIVITY SECOND GRADE - SCIENCE

PROCEDURES FOR TODAY'S ACTIVITY:

1. Move to the CREATIVE CONTRAPTIONS learning center. There can be no more than five people in each center.

2. Load Creative Contraptions according to the instructions given.

3. Explore the software with the other members on your team.

4. **CHALLENGE:**

   Using the materials provided, make your own creative contraption.

MATERIALS NEEDED:

nuts
bolts
plastic piping
legos
snap beads
paper clips
needle, thread, fabric scraps
clothespins
assorted paper
scissors
glue
playdough
pipe cleaners
magic markers
rubber bands
ice cream sticks
buttons

POSSIBLE DECORATIONS FOR THE LEARNING CENTER:

Mobile with creative contraptions

A contraption a child has made with their written explanation of the contraption

SOFTWARE TITLE: Estimation

PUBLISHER:
Lawrence Hall of Science
University of California
Berkeley, CA 94720

PRICE: $30.00

SUMMARY:

Estimation is a program which develops skills used in mathematics and science. These activities include opportunities to estimate length, quantity, rate, relative size, and estimation with non-standard units. Three activities are included:

1) Choo Choo — student tries to stop train over the arrow by pressing the space bar. The sound can be turned off and the speed of train varied;
2) Junk Jar — student selects the object he/she wants to put in a jar by depressing the space bar, the computer selects a random size jar, the child estimates how many objects would fit, the number of objects guessed are dropped into the jar;
3) Bug Tracks — includes the activities on estimating the length of the line — Guess How Long; Which is Longer?; and Match My Line.

INTENDED USE:

Publisher recommends — ages 3-6
Reviewer recommends — ages 3-8, with extended activities
An individual child or a pair of children may explore the program for 15 minute segments.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert program and close door. 2. Turn on computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:

Press the [ESCAPE] key.

COMMAND FUNCTIONS:

1. Space bar moves the flashing square of the menu; return makes a selection.
2. Choo Choo — Use space bar to stop the train. Press C to change the rules—S sound off or on; P for Peek; 1-9 for Speed.
3. Bug Tracks — Use arrow keys or J,K keys

CURRICULUM POSSIBILITIES:

The publisher recommends:

1. Handfuls — estimating number of objects that can be held in the hand (objects, peanuts, pennies, etc) and how many handfuls and total objects

fit in jars of varying sizes. Compare the numbers of different sizes of objects in different sizes of jars.

2. Match My Line
   a. Draw a line. Student draws a line of the same length, shorter, longer, a line of the same length drawn in the opposite direction (right to left).
   b. Draw a curved line. Show a child how to use a centimeter ruler to measure lines. Estimate line length with yarn, compare yarn length to line length.
   c. Provide lengths (3 inches, 14 centimeters). The student estimates length by drawing or listing number of bugs or other objects that would fit on the line.
3. Watch My Step
   a. estimating footsteps or hops
   b. estimating steps around the house, between objects or rooms, etc. or how many steps across a baseball field or around the grocery store.

LEARNING CENTER ACTIVITY KINDERGARTEN - SCIENCE

PROCEDURES FOR TODAY'S ACTIVITY:

1. Move to the ESTIMATION learning center. There can be no more than five people in each center.

2. Load Estimation according to the instructions given.

3. Explore the software with the other members on your team.

4. **CHALLENGE:**

   Look at the objects in the three jars. Make an estimate about the number of objects in each jar. Record your answer on an index card.

   Compare your estimates with other members on your team. See how close you are to their answers!

MATERIALS NEEDED:

3 jars of equal size filled with : small paper clips
large paper clips
bulldog clips

(to substitute, use any 3 items which are small, medium, and large)

index cards for recording guesses

POSSIBLE DECORATION FOR THE LEARNING CENTER:

Train track or bug tracks made from construction paper to put on walls. Add the words, "Sharpen your scientific observation skills."

SOFTWARE TITLE: Fantastic Animals

PUBLISHER: Bantam Electronic Publishing
666 Fifth Ave.
New York, NY 10103

PRICE: $29.95

SUMMARY:

Fantastic Animals is produced as a creative set of activities for fun, to develop observations skills, and can be used with extension activities as a springboard for the scientific study of animals. A fun, challenging way to integrate computer learning into the science curriculum. Activities on the program include:

1. Mixed-up Animals — Create your own animals. Many different animals can be made by the student selecting and combining heads, bodies, legs, tails, and putting them with one of twenty animal tunes. Then, the animal creation can be animated.
2. Animal Arcade — Make real animals by watching parts change and catching the ones that match before time runs out. Three levels are included to test your "animal instincts". The easy level gives two minutes; the medium level gives three minutes and features more incorrect animals; the hardest level features even more incorrect animals.
3. Take the Animals Home — Part or whole animal clues are given to the student to race against time to bring the animals home. "Which animal delights in the desert or which animal is home on the range?"

INTENDED USE:

Publisher recommends: ages 4-9
Reviewer recommends: ages 4-9

HOW TO LOAD:

APPLE	COMMODORE
1. Insert the disk and close door. 2. Turn on the computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:

Press the [ESCAPE] key.

COMMAND FUNCTIONS:

1. At anytime S can be pressed to turn the sound on or off.
2. Press SPACE BAR, cycles through the options or levels on each activity and the menu.
3. Press RETURN to make choices.

CURRICULUM POSSIBILITIES:

The reviewer recommends:

1. Build model habitats.
2. Complete a unit of study on animals and use Fantastic Animals to introduce, extend, or reinforce the unit concepts.
3. Students paint pictures of the animals they create and name them.
4. Students write stories about their real or imaginary animals.
5. Students study or research an animal and its habitat and create an animal on the program and tell how it can survive in the same habitat as the animal they studied.
6. Take a field trip to the zoo and discuss animals in man-made and natural habitats.
7. Make a construction paper collage of your very own Fantastic Animal.
8. Make a mural of all the students' fantastic animals during a unit on zoo or jungle, or desert animals.

PROCEDURES FOR TODAY'S ACTIVITY:

1. Move to the Fantastic Animals learning center. There can be no more than five people in the center.

2. Load Fantastic Animals according to the instructions given.

3. Explore the software with the other members on your team.

4. **CHALLENGE**

   Using the tape, scissors, paper, and other materials provided, create your own fantastic animal. Share these with other members of your team. Write a poem about your animal.

MATERIALS NEEDED:

construction paper
glue
scissors
yarn
collage box
animal picture book

POSSIBLE DECORATIONS FOR THE LEARNING CENTER

Posters of animals

Examples of created animals (ones the children have made)

SOFTWARE TITLE: The Incredible Laboratory

PUBLISHER: Sunburst Communications
39 Washington Ave.
Pleasantville, NY 10570

PRICE: $59.95

SUMMARY:

Students playing **The Incredible Laboratory** use trial and error to discover how fifteen chemicals combine to create colorful and unusual monsters. Each chemical determines a variation of one of the monster's five key body parts—the head, arms, body, legs or feet. In higher skill levels, chemicals have changing properties and may be combined to create entirely new variations. There are three main skill levels in The Incredible Laboratory—Novice, Apprentice, and Scientist. Each section contain both a play and a challenge mode. Although there are many strategies which can be applied to this program, it was designed to place particular emphasis on successive scanning and note taking and making organized lists. Other stategies which are not the main focus but which are included are: information gathering, looking for a pattern or sequence, analyzing, and scanning for clues and hints.

INTENDED USE:

Reviewer Recommends: Second Grade and up
Individual students, pairs, or small groups of children may explore the program for 15 - 45 minute segments.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk in the drive.	1. Turn on computer system. 2. Type: LOAD "*",8 then [RETURN]
2. Turn on computer and monitor.	3. Type: RUN (after READY appears on screen) then [RETURN]

HOW TO RETURN TO THE MAIN MENU:

APPLE	COMMODORE
Press [ESCAPE]	Press [CTRL] and E.

COMMAND FUNCTIONS:

1. Move indicator box with left and right
2. Move indicator box with Cursor arrow keys.
3. Register choices with arrow keys (CRSR).
4. Register choices [RETURN].

CURRICULUM POSSIBILITIES:

The publisher recommends:

1. Lesson on taking notes and organizing data from a Paul Bunyon story included in the teacher notebook accompanying the software.
2. A lesson on trial and error as a problem solving strategy using a maze worksheet and an elimination activity provided.
3. A lesson on trial and error with multiple variables by playing a word game called Jotto described in detail in the teacher materials.
4. Other worksheets for both the novice level and the apprentice/scientist levels are provided with the software.

The reviewer recommends:

1. Create at least one monster. Write a group story about the monster either on the board or using a word processing software such as Magic Slate. Give the monster a name. Tell about its characteristics. Does it have a family? hobbies? Where would it live? What kind of food would the monster eat?

LEARNING CENTER ACTIVITY SECOND/THIRD GRADE - SCIENCE

PROCEDURES FOR TODAY'S ACTIVITY:

1. Move to the Magic Slate/Incredible Laboratory learning center. There can be no more than five people in each center.

2. Load the software according to the instructions given. (Incredible Laboratory in a Commodore system; Magic Slate in an Apple system)

3. Explore both pieces of software with members of your team.

4. **CHALLENGE:**

   Using the **Incredible Laboratory** software, create at least one monster.

   Using Magic Slate, write a group story about your monster. Give the monster a name. Tell about it's characteristics. Does it have a family? hobbies? Where would it live? What kind of food would your monster eat?

MATERIALS NEEDED: (for children to make monsters)

poster board
assorted paper
crayons
magic markers
pipe cleaners
ice cream sticks
glitter
fabric scraps
rubber bands
buttons
scissors
glue

POSSIBLE DECORATION FOR THE INTEREST CENTER

Examples of monsters which the children have made, to be placed on the wall

Mobile of monsters

SOFTWARE TITLE: Stickybear Opposites

PUBLISHER:
Weekly Reader/Xerox
245 Long Hill Road
Middletown, CT 06457

PRICE: $28.00

SUMMARY:

Stickybear Opposites is a program designed to acquaint children with the concept of opposites. It is also appropriate for students six to eight years of age with extended learning activities in the areas of language arts and science. The program presents various objects and characters for which the student can control the animation. Some of the opposites include up/down, back/forward, happy/sad, day/night, fast/slow, many/few, over/under, up/down, light/dark, low/high, and near/far. This program allows the child to control the computer animations and explore or extend their knowledge of 20 opposite pairs.

INTENDED USE:

Publisher recommends — ages 3-6
Reviewer recommends — ages 3-6 and 6-8, with extended activities
An individual child or pair of children may explore the software in 10-30 minute segments. A teacher-directed group experience can be used, with a problem solving, discussion format.

HOW TO LOAD:

APPLE

1. Insert disk and close door.
2. Turn on the computer and monitor.

COMMODORE

1. Turn on computer system.
2. Type: LOAD "PRG",8,1 then [RETURN].
3. Type: RUN (after READY appears on the screen) then [RETURN].

COMMAND FUNCTIONS:

1. SPACE BAR — New set of opposites
2. KEYS O,P OR NUMBERS 1,2 produce companion opposites
3. Keyboard, paddle, or joystick options are available.

CURRICULUM POSSIBILITIES:

The publisher recommends:

1. Yes and No: A Book of Opposites by Richard Hefter may be included in the software package.
2. Name the Opposite: ask the children to identify the picture displays by name.
3. Match the Opposites: ask children to find the match on the poster included in the software package.

4. Follow the Bouncing Ball: an activity to control the bouncing ball; reinforces concept of high/low.
5. Opposites are Everywhere: an activity to encourage looking for opposites in the child's environment.

The reviewer recommends:

1. Create sentences with the opposite words or enter opposite lists on a word processing program.
2. Make picture cards to make an opposites box.
3. Spell the opposites game, spelling bee.
4. Role play the opposites.
5. Add new opposites to the list throughout the year.
6. Create a concentration board game using opposite matches.
7. Create 2-piece opposite word puzzles.
8. Program new opposites using a data base or LOGO program.
9. Discuss opposites seen on the playground or in the room.
10. Make an opposites book of pictures and words using the computer printer.
11. List all the opposite pairs of words the class remembers after using the software, using an experience chart.
12. Present a short oral report on two opposites — definitions or what happens that makes things opposites.

MATHEMATICS SOFTWARE
WITH CURRICULUM ACTIVITIES

SOFTWARE TITLE: Challenge Math

PUBLISHER:
Sunburst Communications, Inc.
39 Washington Ave.
Pleasantville, NY 10570

PRICE $59.00

SUMMARY:

Challenge Math presents addition, subtraction, multiplication, and division in three different game formats. The teacher may control speed, number of problems, and level of difficulty for the students so it is suitable for several grade levels. Alien Intruder is a speed drill situation to identify the correct answer to basic number facts. Students manuever to capture the correct answer before an alien being gets it. Digitosaurus involves a dinosaur who increases in age with every problem correctly answered. Students must determine which of three problems will give the largest answer and type the answer to that problem. Large numbers become fun as students help the Digitosaurus grow as old and as wise as possible. Explain the aging formula to the students which is in the teacher's manual. Math Mansion involves skills in all math functions in order to get through the maze of mansion rooms and safely to the outside. Parts of the problem, including the answer, are provided. Students must determine what math function and what other numbers are needed to produce the answers.

INTENDED USE:

Publisher recommends: Grades 1-6
Reviewer recommends: Grades 1-6
An individual or pair of children may explore the software for 10-30 minutes.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door.	1. Turn on computer system. 2. Type: LOAD "*",8 then press [RETURN].
2. Turn on computer and monitor.	2. Type: RUN (after READY appears on screen) then [RETURN].

TO GET INTO THE TEACHER OPTION:

Remove write protect tab from disk.	Remove write protect tab.
Press [CTRL] T while at main menu.	Press T while at main menu. Press [RETURN].
Follow instructions provided there.	Follow instructions provided.

HOW TO RETURN TO THE MAIN MENU:

Press [ESCAPE] key.	Press [CONTROL] and E.

CURRICULUM POSSIBILITIES:
The publisher recommends:

1. Once students are familiar with Alien Intruder or Digitosaurus, use them for team or individual competition.
2. Have older students figure out Math Mansion's floorplan as they play the game and turn in their view of the floorplan.

The reviewer recommends:

1. Study about dinosaurs and what years they were on earth. Relate dates to the calendar. Design the study at the appropriate developmental level.
2. Predict Digitasaurus' age after every one plays. Add the ages each child scored to see how old the class made the dinosaur. See how this relates to how long since dinosaurs were on earth.
3. Use a word processor to write a dinosaur story or make a class book after printing the stories.

LEARNING CENTER ACTIVITY SECOND GRADE - MATH

PROCEDURES FOR TODAY'S ACTIVITY:

1. Move to the CHALLENGE MATH learning center. There can be no more than five people in each center.

2. Load Challenge Math according to the instructions given.

3. Read the CHALLENGE before beginning.

4. Explore the software with the other members on your team.

5. CHALLENGE:

   Before beginning, make a prediction for the age of Digitosaurus after 2 minutes of play, 5 minutes of play, and 7 minutes of play. Compare your predictions to the actual age after you complete the activity on the computer.

MATERIALS NEEDED:

index cards for age predictions

POSSIBLE DECORATIONS FOR THE LEARNING CENTERS:

picture of digitosaurus

posters of real dinosaurs and a book on dinosaurs (either stories about dinosaurs or a reference book on dinosaurs)

SOFTWARE TITLE: Early Games

PUBLISHER:
Springboard Software
7808 Creekridge Circle
Minneapolis, MN 55435

PRICE: $24.50

SUMMARY:

Early Games is designed to introduce a variety of basic skills to children as well as to provide an introduction to computer use. A picture menu enables the children to select from the 9 activities by pressing any key when the desired picture depicting the activity is shown on the screen. An optional word menu is included by depressing CONTROL and W simultaneously. The activities include:

1. Match Numbers builds familiarity with numerical symbols, develop matching skills, develop accuracy locating numbers on the keyboard by matching colorful large numerals on the screen to the keyboard numbers.
2. Count presents numerical sequence, develops association between the numbers of objects and its numerical symbol by counting colorful blocks.
3. Add uses objects and symbols to introduce addition problems and mathematical symbols (+ =), reinforces left to right scanning. A stack of blocks is shown with + sign and = sign, student enters sum 0-9.
4. Subtract uses objects and symbols to introduce subtraction problems and their symbol (-), reinforces left to right scanning. A stack of blocks is shown with the - sign and = sign, student enters answer 0-9
5. Match Letters builds discrimination, recognition, and matching skills using alphabet letters, develops speed and accuracy when locating alphabet letters on computer keyboard. Child matches large colorful letter to the keyboard letter.
6. Alphabet introduces alphabet sequence, reinforces knowledge of computer keyboard. The child is challenged to enter the alphabet letters in the correct sequence. If the child completes the entire alphabet, he or she is rewarded by hearing the ABC song.
7. Names develops name recognition, challenges memory abilities when sequencing letters to create words, introduces idea that letters combine to form words. Provides practice typing the student's name.
8. Compare Shapes reinforces concept of same and different, encourages child to attend to shape and configuration. Four colorful shapes are displayed to determine by identifying the number of the different shape.
9. Picture Draw —drawing pictures by depressing a letter key to direct the line, using color and line for creative expression or representation.

INTENDED USE:

Publisher Recommends: 3-6 years
Reviewer Recommends: 3-8, with extended learning activities on Subtract and Picture Draw for 7- and 8-year olds.
An individual or pair of children may explore the program for 15 - 20 minute segments.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door.	1. Make sure caps lock up.
2. Turn on computer and monitor.	2. Turn on computer system.
	3. Type: LOAD "EARLY GAMES", 8 then [RETURN].
	4. Type: RUN (after READY appears on screen) then [RETURN].

HOW TO RETURN TO THE MAIN MENU:
Press the [ESCAPE] key.

COMMAND FUNCTIONS:

1. Select from picture menu by pressing any key when the activity picture desired is on the screen.
2. Press CONTROL and W simultaneously to see the word menu and choose the program by selecting the appropriate number.
3. To review instructions, press CONTROL and the I key.
4. Picture Draw — press any key to draw pictures—keys on right side of keyboard make line to right; those of left side make line go left. Keys above the home row make the line go up; those below make the line go down. Keys located in the corners, for example both up and to the right, make the line go diagonally in that direction on the screen.
5. The SPACE BAR changes the color of the line; continue to press until the color desired appears in the flashing cursor at the end of the line.
6. Press CONTROL and P to enter the name of the picture; then RETURN.
7. During the picture menu, press CONTROL and P to get a stored picture from the disk; use arrow keys to select which picture to put on the screen.

CURRICULUM POSSIBILITIES:

The publisher recommends: Fifty-two ideas, 5-8 for each of the nine activities. These are included in the software booklet. An example for each activity is shown below.

1. Match Numbers—
    a. Collect nine similar objects such as small blocks, stones, or pennies, and count out the number of objects appearing on the screen to help the child associate the symbol with the amount it represents.
    b. Look for numbers around the room. Find and label numbers on clocks, in books, on appliances, and on the many other places they appear, to increase the child's awareness of importance of numbers in their world.
    c. Practice writing numerical symbols in a variety of ways: fingerpaint or shaving cream, in the sandbox, or on paper using crayons, markers, or pencils.
2. Count — Go on a number walk. Using a die, throw it and then take that many steps toward some end point. A shoe box makes a great die holder. Once the child is good with numbers 1-6, add a second die to make it more complex.

3. Add — Create the problem on the screen using objects such as coins or marbles; then solve the problem.
4. Subtract — Get 15-20 index cards and put a subtraction problem on each of them. Put the answer on the back if you would like to do so. Go outside and have the children walk through each of the problems. 5 - 3 would become five steps forward and three steps back.
5. Match Letters — When a letter appears, try to name a number of things that begin with that sound. Make a book with each letter and collect pictures of objects which begin with that letter.
6. Alphabet — Name a few objects that begin with each letter sound as it appears on the screen to help develop phonetic awareness; Sing along with the ABC song at the end of the program.
7. Names —
    - a. Collect some small objects and attach words to each of them. Enter the words into the computer so the child can practice spelling them. Child may choose the objects or words he or she would like to learn.
    - b. Type in some verbs to which the child can respond. For example when "jump" appears on the screen, the child jumps. This brings a little physical activity into computer learning while teaching the verbs as a part of speech.
    - c. Write words of objects the child would like to learn to spell on a heavy piece of paper and cut it into a few pieces to make a puzzle for the child to put together.
8. Compare Shapes — Practice making discriminations that use senses other than sight: use the sense of touch to discriminate textures, test your sense of taste using salt and sugar, try labeling sounds without looking at their source or discriminating people's voices, and challenge the sense of smell with spices, liquids, and perfumes.

9. Picture Draw —
    - a. As the line moves around the screen, talk about the direction it is heading: right, left, up, down.
    - b. Encourage the child to enjoy the process of drawing. The design doesn't have to look like any object in order to be fun or to be a work of art.
    - c. When the children are on the playground, describe what they are doing using prepositional phrases.

LEARNING CENTER ACTIVITY KINDERGARTEN - MATH

PROCEDURES FOR TODAY'S ACTIVITY:

1. Move to the EARLY GAMES learning center. There can be no more than five people in each learning center.
2. Load the software into the Commodore computer system according to the instructions given.
3. Explore the software with the other members on your team.
4. **CHALLENGE:**

   Select a pattern card and duplicate the design with unit blocks.

   Make a design with unit blocks. Using crayons, magic markers, construction paper, scissors, and glue—make a pattern card for your design.

MATERIALS NEEDED:

pattern cards
unit blocks
scissors
crayons
magic markers
construction paper
glue

POSSIBLE DECORATIONS FOR THE LEARNING CENTERS:

Mobile with unit blocks (made from construction paper)

Unit block designs (construction paper) to put on wall

SOFTWARE TITLE: Fraction Factory

PUBLISHER: Springboard Software
7807 Creekridge Circle
Minneapolis, MN 55435

PRICE: $29.95

SUMMARY:

Fraction Factory helps make learning about fractions easier and more fun by visually simplifying a complex concept. The software utilizes colorful graphics and musical sounds to help describe what the numbers mean. Helpful hints appear throughout the activities to aid in understanding the concept and choosing a correct answer. There are five games within Fraction Factory — Fractions and Sets, Equivalent Fractions, Fractions of a Number, Adding Fractions, and Subtracting Fractions. The program gives the student an option of using a picture or word menu and the choice of sound on or off.

INTENDED USE:

Publisher Recommends: Third Grade through Junior High
Reviewer Recommends: Second Grade and up (with concrete activities)
Individual students, pairs, or small groups for 15 - 30 minute segments.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door.	1. Make sure caps lock is up.
2. Turn on the computer and monitor.	2. Turn on computer system.
	3. Type: LOAD "*",8 then [RETURN].
	4. Type: RUN (after READY appears on screen) then [RETURN].

HOW TO RETURN TO THE MAIN MENU:
Press the [ESCAPE] key.

COMMAND FUNCTIONS:

1. CTRL - S turns the sound on and off.
2. Pressing CTRL - W while in the Picture Menu gives the Word Menu.
3. To review instructions, press CTRL - I while in the picture menu.

CURRICULUM POSSIBILITIES:

The publisher recommends:

1. Talk about fractions in everyday situations. If you are cutting food, start with halves and label. Then with each cut, rename the amount. As a piece is taken from the food, label how much was taken and how much is

left. Encourage the student to find equivalent fractions for this amount.

The reviewer recommends:

1. Students develop a set of word cards which include any new terms for fractions. Examples: numerator, denominator, equivalent, fractions, sets.
2. Students use concrete objects to count sets and then divide into fractions of the whole set.
3. Encourage the students to make sculptures from folding paper. Discuss the fractions involved in obtaining certain shapes.
4. Measure objects in the classroom using pieces of yarn or rulers. Encourage students to compare sizes of objects and to determine relationships of smaller objects to larger ones.

LEARNING CENTER ACTIVITY THIRD GRADE - MATH

PROCEDURES FOR TODAY'S ACTIVITY:

1. Move to the FRACTION FACTORY learning center. There can be no more than five people in each center.
2. Load Fraction Factory according to the instructions given.
3. Explore the software with the other members on your team.
4. **CHALLENGE:**
    a. Draw two 2" lines on a sheet of paper.
    b. Measure those lines with a ruler. How close were you to the actual length?
    c. Draw one line any length.
    d. Draw four lines that when combined equal the length of the longer line.
    e. Measure the four lines to see how close your drawings were to the actual length of the longer line.

MATERIALS NEEDED:

rulers (standard and metric)
paper
pencils

POSSIBLE DECORATION FOR THE LEARNING CENTER:

Mobile with fractions

SOFTWARE TITLE: Fay, That Math Woman

PUBLISHER: Dida Tech Software, available from Scholastic
549-810 West Broadway
Vancouver, BC, Canada, V5Z 4C9

SUMMARY:

Fay, That Math Woman provides addition, subtraction, multiplication, and division practice at various levels of difficulty. Fay steps out the correct answers on her number line. If the answer is correct, she jumps up to the next level number line. If the answer is incorrect, she shows the correct answer and offers another opportunity to answer that question. If a mistake is made again, Fay drops down to the previous level number line. Fay taps her foot to help the children count and provides animated reinforcement. **Note a female figure is presented as the math expert.**

INTENDED USE:

Reviewer recommends: ages 6-12
An individual child or pair of children may explore in 10-30 minute segments.

HOW TO LOAD:

APPLE

1. Insert disk in drive and close the door.
2. Turn on computer and monitor.

COMMODORE

1. Make sure caps lock is up.
2. Turn on computer system.
3. Type: LOAD "FAY", 8 then [RETURN].
4. Type: RUN (after READY appears on screen) then [RETURN].

HOW TO RETURN TO THE MAIN MENU:
Press the [ESCAPE] key.

CURRICULUM POSSIBILITIES:

The reviewer recommends:

1. Make a math art project — open ended. Draw Fay, and present your own math game, or present a project on measurement, pairs, comparison, etc.
2. Provide materials to make numeral paste-ups in order of problems.
3. Play a flashcard game in pairs, teams, or small groups by assisting children to write problems for each other.
4. Write Fay or a friend a letter about playing Fay, That Math Woman. Use a word processing program and printer if possible.
5. Discuss occupations using math on a daily basis.

LEARNING CENTER ACTIVITY FIRST GRADE - MATH

PROCEDURES FOR TODAY'S ACTIVITY:

1. Move to the FAY: THAT MATH WOMAN learning center. There can be no more than five people in each center.

2. Load the software according to the instructions given.

3. Explore the software with the other members on your team.

4. **CHALLENGE:**

   Using the guide sheet provided, write number combinations and facts to be entered into , or mailed to, Fay: That Math Woman. See how many you can write in three minutes! Now do the same for math families.

MATERIALS NEEDED:

Fay: That Math Woman guide sheets
sand timer/clock timer

POSSIBLE DECORATIONS FOR THE LEARNING CENTER

"Fay" drawn on poster board to place on wall

Creative art examples of "Fay" made by children

A replica of Fay which can be moved along a real number line (0 - 15) and a set of flash cards with one digit problems whose sums are 0 - 15.

SOFTWARE TITLE: Patterns and Sequence

PUBLISHER: Hartley Courseware, Inc.
133 Bridge St.
Dimondale, MI 48821

PRICE: $39.95

SUMMARY:

Patterns and Sequence has four activities which focus on shape matching skills. Each of the activities incorporate animation, color, and sound into the program. One feature of **Patterns and Sequence** is the Teacher Parent Design Options which allow for setting skill levels and time limits on each of the activities. Scratch Match has chicken and nest graphics to match shapes. A correct response hatches the baby chick. In Ms. Bug, matching is accomplished by finding the correct "teeth" shapes for each of two bugs. The object of Train Game is to match loads of shapes on boxcars to the load of shapes on the train. Dan's Van finds missing parts of a shape or figure. A correct response sends Dan off in the car. All activities give the student assistance when an incorrect answer is given; however, the correct answer is never shown on the screen unless pressed by the child. The screen changes to a new problem automatically.

INTENDED USE:

Publisher recommends — ages 5-6
Reviewer recommends — ages 5-6
An individual child or a pair of children may explore the program in 5-15 minute segments.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert diskette into drive. 2. Close drive door. 3. Turn on computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
Press the [ESCAPE] key.

COMMAND FUNCTIONS:

1. SPACE BAR moves the cursor through menu options (or the cursor will move automatically)

2. Press RETURN to choose an activity.

3. CONTROL T gives the teacher/parent options of sound on/off; setting speed of the cursor; timing the activity by setting the number of screens a student sees during an activity; setting activity length for a student by designating a fixed number of games.

CURRICULUM POSSIBILITIES:

The publisher recommends many curriculum activities in the software program booklet. Some of these are:

1. Chick Pick is a sorting game to be used to introduce or supplement Scratch Match and Ms. Bug. Using the shape stencils provided in the software package, make shapes out of a variety of colors and textures. Activities can be done on the following levels:
   Level 1: Select a shape. Have the child find another just like it.
   Level 2: Sort the pieces according to color or material.
   Level 3: Sort the pieces according to shape.

2. Scratch Match teaches visual discrimination of abstract designs and matching one shape to one shape in three levels. Level 1 matches one shape to three dissimilar choices; Level 2 matches one shape to three choices, two of which are similar; Level 3 matches one shape to three similar choices.

3. Ms. Bug helps with visual discrimination and matching of two-shape sequences on three levels. Level 1 matches a two-shape sequence to three dissimilar choices; Level 2 matches a two-shape to three choices, two of which are similar; Level 3 matches a two-shape sequence to three similar choices.

4. Provide game boards, 4" x 12" with 3" squares marked, to indicate the placement area for shapes and symbols. Use the shape pieces from Chick Pick. This activity could be used with Train Game.
   Level 1: Teacher places 3 of any one shape on a board. The child duplicates the pattern.
   Level 2: New shapes are presented and duplicated.
   Level 3: Teacher, or another student, presents a sequence of color, shapes, and textures. Children should match each.

5. Train Game uses three-shape sequences on the same three levels as Scratch Match and Ms. Bug.

6. Provide 6" X 8" cards with shapes, or letters drawn on them. Pre-cut and pre-shaped pipe cleaners of various colors should also be provided. At Level 1 present simple shapes and child makes the shape over the hand-printed one using pipe cleaners. Level 2 presents capital letters for the same shaping activity with pipe cleaners and Level 3 introduces the lower case letters.

7. Dan's Van focuses on visual discrimination in part-whole relationships. Level 1 requires selection of a missing portion of a design from 3 dissimilar shapes; Level 2 from 3 similar choices; Level 3 from three identical shapes in different positions.

SOFTWARE TITLE: Size and Logic

PUBLISHER: Hartley Courseware, Inc.
133 Bridge St.
Dimondale, MI 48821

PRICE: $37.95

SUMMARY:

Size and Logic has four activities which focus on size matching, logic and deduction, and reproducing sequences. One feature of Size and Logic is the Teacher Parent Design Options which allow for setting skill levels and time limits on each of the activities. Farm Friends is a size matching activity where the student finds an animal that is the same size as the one in the barn shown on the screen. The object of Playmates is to expand the student's ability to group animals of the same size. Logic and deduction skills are introduced in Fairy Fun. The student's task is to infer from the sequence presented on the screen the logical order of what is to follow. The purpose of Ant's Picnic is to encourage the child to focus on a total sequence of food on a picnic table and then reproduce the sequence using its component parts. All activities give the student assistance when an incorrect answer is given; however, the correct answer is never shown on the screen. The screen changes to a new problem.

INTENDED USE:

Publisher recommends: ages 5-6
Reviewer recommends: ages 5-6
An individual child or a pair of children may explore the program in 10 - 20 minute segments.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert diskette into drive. 2. Close drive door. 3. Turn on computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
Press the [ESCAPE] key.

COMMAND FUNCTIONS:

1. The cursor automatically moves through the menu choices or it can be moved using the SPACE BAR.

2. Press RETURN to make selections.

3. CONTROL T gives the teacher/parent options of sound on or off; setting speed of the cursor; timing the activity by setting the number of screens a student sees during an activity; setting activity length for a student by designating a fixed number of games.

CURRICULUM POSSIBILITIES:

The publisher recommends the following curriculum activities from the software guide booklet:

1. A full deck of 54 Size & Logic cards are included with the software. Within the deck there are: 18 red cards, 18 blue cards, and 18 green cards. On these cards, are pictured 18 rabbits, 18 cats, and 18 lambs. Each animal may be pictured either small, medium, or large on the cards. Give the child any number of cards, but enough to make several pairs. Ask the child to find two cards that match or are a pair. The cards may be matched by color, animal, or size of the animal pictured.

2. Using 36 cards or the whole deck, deal the 6 cards face down to a group of two to four players. The remaining cards are placed in a draw pile. The game is played like Fish, with players matching the pairs by asking for specific cards from other players or by drawing from the pile. The game continues until all the cards have been paired.

3. Give the entire deck or a subset of the deck to a child and allow the child to work alone, examining, sorting, and arranging cards according to his/her own thinking. Tell the child to "look carefully" and make supportive, descriptive comments such as "You found all the biggest ones."

4. With children working in twos or threes, have them use the cards together and find any combination of cards you select such as "all the medium-sized animals".

5. With children working individually or in small groups, place the pile of cards face down. The children draw the cards, one by one, and place them in piles according to categories you have pre-selected, such as small, medium, and large.

6. Select six to eight matching pairs of cards. Separate the pairs into two identical piles. Place the cards from one pile next to each other face up to make a game board. (Try inserting them into a photo album page with a clear plastic cover.) Give this group of cards and the matching cards to a child (or children) and have them place each card over the one it matches. If you wish, the child can also explain each match to you.

7. To supplement Fairy Fun, use the printed card strips provided with the program. Have the child look carefully at the strip, select the card that should appear next in the series, and place it at the right end of the strip.

8. To supplement Ant's Picnic, show the card strip to the child and give him/her 10 cards (including those pictured on the strip). Have the child duplicate the strip by placing the correct cards in a row below the model strip.

SOFTWARE TITLE: Stickers

PUBLISHER:
Springboard Software
7807 Creekridge Circle
Minneapolis, MN 55435

PRICE: $21.26

SUMMARY:

Stickers is a creative program for children to make colorful pictures. The students select and plan the placement of the stickers after making choices between shapes, colors, and positions. The activities include:

1. *Sticker Work Area* provides picture categories with several picture options. Students match the stickers provided and can rotate and paint them by selection of the rotation or paint icon. Skills developed include discrimination, matching shapes, size, and orientation; develops part/whole relationship, encourages problem solving and decision making, and develops fine motor control.
2. *The Playground* allows the student to drop stickers anywhere desired. They create their own pictures and can save and reload them. Skills developed include using parts to plan and create a whole picture, encourages translating an idea into a picture, and enhances decision-making skills.
3. *The Sticker Maker* allows the student to change what the stickers look like using a grid, work area. Then, they can return to the Playground with their new sticker shapes.

INTENDED USE:

Publisher recommends: ages 4-12
Reviewer recommends: ages 4-12 (ages 4-5, with adult supervision)
An individual or pair of children can explore the program for 20-30 minute segments.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door.	1. Insert disk and close door.
2. Turn on computer and monitor.	2. Turn on computer system.
	3. Type: LOAD "STICKERS",8 then [RETURN].
	4. Type: RUN (after READY appears on the screen) then [RETURN].

COMMAND FUNCTIONS:

1. Use I, J, K, or L keys to move large steps.
2. Hold down the CONTROL key while pressing any of these same keys to move in small steps.
3. Press the SPACEBAR to make a selection, to pick something up, or to drop something.
4. If using a joystick, press the button to pick up or drop stickers.
5. Press CONTROL S to control sound off or on.

6. Use cursor control key and SPACEBAR to select from the picture menu. Icons(picture symbols) are shown on the screen and on the picture menu which allow selections.
7. Save and load feature — select the disk icon to save and use the keyboard or joystick to select either save or load.
8. Type in name of picture to save and press RETURN to load, move the cursor over the file name and press the SPACE BAR or the joystick button. Save your pictures on your own disk, insert it when the screen says to do so.

CURRICULUM POSSIBILITIES:

The publisher recommends:

1. Encourage students to pick up existing shapes and place them on the screen just for fun. It doesn't have to look like anything.
2. Show the students how to make simple pictures using the shapes (a snowman, a tower, a caterpillar). Interesting patterns can also be made by repeating the same shape around the screen.
3. Nurture creativity by allowing exploring and playing around. Encourage experimentation with all the shapes, colors, and then rotate them for a new perspective.

The reviewer recommends:
1. Make construction paper sticker designs and recreate them using Sticker Playground.
2. Encourage creativity as well as planning projects.

SOFTWARE TITLE: Stickybear Numbers

PUBLISHER: Weekly Reader Family Software/Xerox
245 Long Hill Road
Middletown, CT 06457

PRICE: $23.97

SUMMARY:

Stickybear Numbers is a counting and a number recognition and reinforcing program. It is somewhat discovery-oriented, allowing the student an opportunity to work with the software with minimal adult assistance. The program presents numerals with the number of animated objects from 0 to 9. There are many picture series stored on the diskette to allow for a variety of counting scenes.

INTENDED USE:

Publisher recommends — ages 3-6
Reviewer recommends — ages 4-6
An individual child or a pair of children may explore the program in 10-15 minute segments.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert diskette into drive. 2. Close drive door. 3. Turn on computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
Press CONTROL, OPEN APPLE, and RESET keys simultaneously.

COMMAND FUNCTIONS:

1. SPACE BAR begins activity.
2. ANY NUMBER KEY produces a graphic illustration of that number of objects moving on the screen with sound.
3. SPACE BAR while a number is on the screen will decrease the number of objects and the numeral by 1; continued use of the space bar will decrease objects all the way down to zero; then change the type of object and increase the objects from zero to nine.

CURRICULUM POSSIBILITIES:

The publisher recommends:

1. One Bear, Two Bears by Richard Hefter, a hardback book included in the software package, is designed to encourage counting and number recognition. The Stickybears count up to ten and then back to one.
2. Count the Objects: Ask students to count the objects in the picture display.
3. Count Down, Count Up: Students count aloud while pressing the space bar.
4. Name the Objects: Ask students to identify the objects in the picture display.
5. Match the Numbers: Ask the students to pick a number on the poster (included in the software package) and then find it on the computer.

The reviewer recommends:

1. Make numeral cards with stickers or magazine cut-out objects.
2. Create 2-piece puzzles with numeral and the corresponding objects.
3. Sponge paint with sponges cut out in the shape of the numerals.
4. Fingerpaint the numerals 0-9.
5. Make Stickybear number puppets.
6. Develop fingerplays counting from 0-9 and back to 0.
7. Students in small groups form numbers with their bodies.
8. Make numerals out of toothpicks, yarn, macaroni, or seeds as art projects.
9. Use a word processing program to practice entering numerals and strings of numerals. (K-level use corresponding objects or set cards to count. First-grade enter huge numbers and students can count as far as possible.) Number off and each child can enter their number.
10. Use the LOGO program disk. Program different line lengths. Measure with a ruler and discuss length of turtle steps.

SOFTWARE TITLE: Stickybear Shapes

PUBLISHER: Weekly Reader Family Software/Xerox
245 Long Hill Road
Middletown, CT 06457

PRICE: $28.00

SUMMARY:

Stickybear Shapes is designed for students to identify five common geometric shapes—circle, square, triangle, rectangle, and diamond. The student learns the function of the arrow keys and space bar on the keyboard, or how to control the paddle or mouse. Pick It helps students identify the missing shape in a picture. Name It reinforces matching shapes with their names. In Find It, the students match a shape with one hidden in the picture on the screen. All activities are accompanied by music and animation.

INTENDED USE:

Publisher recommends — ages 3-6
Reviewer recommends — ages 4-7
An individual, a pair of children, or a small group may explore the software in 10-15 minute segments.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert diskette into drive.	1. Turn on computer system.
2. Close drive door.	2. Type: LOAD "PRG",8,1 then [RETURN].
3. Turn on computer and monitor.	3. Type: RUN (after READY appears on the screen) then [RETURN].

HOW TO RETURN TO THE MAIN MENU:
Press the [ESCAPE] key.

COMMAND FUNCTIONS:
1. Select K for Keyboard, P for paddle, or M for Mouse.
2. Press arrow keys, turn the paddle, or move the mouse to select the activity title.
3. Space bar begins the game and selects new pictures.
4. Sound is controlled by pressing CONTROL Q.

CURRICULUM POSSIBILITIES:
The publisher recommends:

1. Shapes by Richard Hefter, a hardback book included in the software package, uses Stickybears to illustrate shapes.

2. Match the Shapes: the students match shapes on the computer with shapes on the poster included in the software package.

3. Shapes are Everything: the students are encouraged to look for shapes in their environment.

The reviewer recommends:

1. Provide materials for students to fingerpaint shapes, to make a shape book, to sort shapes by color, using concrete objects or worksheets (for older students) or make shape figures and discuss how these relate to the program.
2. Musical activity where students holding shape cards (the same as the leader) stand up. Shapes may be color coded for young children. Stickybear bag puppets may be made with shape clothes.
3. Students, in small groups, form shapes with their bodies.
4. Use toothpicks, yarn, macaroni, or seeds to make shape art projects.
5. Paint using sponges cut out in the five geometric shapes.
6. Use the LOGO language software to explore characteristics of shapes (square—four sides of equal length). Count the number of turtle steps. Do measurement activities using objects. Estimate line length by cutting yarn to discover shape properties.

WORDPROCESSING SOFTWARE
WITH CURRICULUM ACTIVITIES

SOFTWARE TITLE: Magic Slate: The Word Processor That Grows With You

PUBLISHER:
Sunburst Communications
39 Washington Ave.
Pleasantville, NY 10570

PRICE: $67.46

SUMMARY:

Magic Slate is a word processing package which allows the students to move through three versions as their skill level increases. For the younger student, the 20 column version prints out in primary-sized type, is very easy to use, and includes several menu options. The 40 column version combines ease of use with a full range of features. The 80 column version is a powerful, professional word processor with many advanced features. One copy of Magic Slate can be used for many computers at the same time, with each student or pair of students working from a data disk, as permitted by the publisher. There is a set of materials which are included in the software package. These include—Magic Slate disk, which contains the main program; Magic Slate Teacher's Guide, with classroom lessons , handbooks for teacher and students, and applications of the 20, 40, and 80 column versions of Magic Slate; Magic Slate Reference Manual , for the experienced word processor, and Magic Slate Quick Reference Cards, for an overview of all commands available.

INTENDED USE:

Publisher Recommends: Preschool through adult
Reviewer Recommends: Preschool through adult

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk into disk drive. 2. Close disk drive door. 3. Turn on disk drive and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
Press [ESCAPE] and type Q.

COMMAND FUNCTIONS:
See the Magic Slate manual for complete instructions.

CURRICULUM POSSIBILITIES:

The publisher recommends:

The complete teacher's manual accompanying the software has numerous curriculum possibilities included.

The reviewer recommends:

Use the word processor to extend other software experiences.

LEARNING CENTER ACTIVITY SECOND/THIRD GRADES - WORD PROCESSING

PROCEDURES FOR TODAY'S ACTIVITY:

1. Move to the Magic Slate/Incredible Laboratory learning center. There can be no more than five people in each center.

2. Load the software according to the instructions given. (Magic Slate in an Apple system, Incredible Laboratory in a Commodore system)

3. Explore both pieces of software with members of your team.

4. **CHALLENGE:**

Using the Incredible Laboratory software, create at least one monster.

Using Magic Slate, write a group story about your monster. Give the monster a name. Tell about it's characteristics. Does it have a family? hobbies? Where would it live? What kind of food would your monster eat?

SOFTWARE TITLE: Picture Book Fun: Pond, Pets, & Chicks

PUBLISHER: Discovery Discs
C/O John Laffan
146 Cross Street
Middletown, CT 06457

PRICE: $25.00

SUMMARY:

The Picture Book Fun series presents shapes in a classified form and in limited number to promote meaningful decision making. An index card shows the shapes available. They are selected by numbers, easy for the child to locate. The child can move each object on the screen and decide where it is to be placed. Once an object is fixed in its location, other shapes may be added to the picture in the same manner. The child may then tell an original story about the picture which an adult may type in below the picture, or older children may type their own stories. This provides an innovative creative writing experience for younger children.

Pond, Pets, & Chicks contains four shape sets: PETS with a girl, a boy, bird, rabbit, dog, cat, fish, kitten, and puppy; AT THE POND with a young tadpole, an older tadpole, a frog, a turtle, bug, dragonfly, butterfly, and lily pad; HATCHING CHICKS with an egg, a cracked egg, a hatching chick, a newly hatched chick, a chicken, a girl and a boy; and MORE POND CREATURES with a duck, duckling, snail, fish, snake, toad, and plants.

INTENDED USE:

Publisher recommends: Ages 4-8
Reviewer recommends: Grades K-2

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door. 2. Turn on computer and monitor. 3. Press [RETURN] when title page appears.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
Press N for new shape set.

COMMAND FUNCTIONS:

1. Press the number of the shape desired. It will appear in the upper left corner of the screen. Move it with the four arrow keys to the location desired.
2. Press the Closed APPLE key to set the shape at that location.
3. To erase a shape, place an identical shape over it and press the Closed APPLE key.
4. Type C to clear the screen for a new picture.
5. Type N to select a different shape set.
6. Press D to access disk functions such as saving and loading pictures.
7. Press W to write a story to accompany the picture. The story will be

written below the picture.

8. Make all corrections, using the left arrow key, before pressing [RETURN] to go on to the next line.
9. The Beep indicates the end of the line. Erase all of any unfinished word and press [RETURN] to go to next line. Type in that word on the next line.
10. When story is finished press the [ESCAPE] key. The screen will ask if you want to save the picture text. Respond with Y or N and [RETURN].

CURRICULUM POSSIBILITIES:

LEARNING CENTER ACTIVITY   KINDERGARTEN/FIRST GRADE - WORD PROCESSING

PROCEDURES FOR TODAY'S ACTIVITY:

1. Move to the POND, PETS, and CHICKS learning center. There can be no more than five people in each center.

2. Load the software according to the instructions given.

3. Explore the software with the other members of your team.

4. **CHALLENGE:**

   Design a picture using Pond, Pets, and Chicks.

   Write a group story about the picture.

MATERIALS NEEDED:

Handout showing each icon used in Pond, Pets, and Chicks

POSSIBLE DECORATIONS FOR THE LEARNING CENTER

Picture books or story books about ponds, pets, and/or chicks

Posters illustrating pond life, pets and their care, and/or life cycle of the chicken

SOFTWARE REVIEWS

Teachers may add their own curriculum activities to the pieces of software described in this section.

SOFTWARE FOR SCIENCE

SOFTWARE TITLE: Animal Kingdom

PUBLISHER:
Unicorn Educational Software
1775 East Tropicana Ave.
Las Vegas, NV 89109

PRICE: $26.21

SUMMARY:

Animal Kingdom introduces various animal families for categorization and learning about animal habitats. Other games with animal names teaches anagramming, discrimination, concentration, and memory. Six different learning activities are included: All About Animals; Animals Spells; Animalgrams; Who am I?; What's Different?; and Memory Game.

INTENDED USE:

Publisher recommends:	Grades 1-6
Reviewer recommends:	Grades 1-4

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door.	1. Turn on computer system.
2. Turn on computer and monitor.	2. Type: LOAD "UNICORN",8 then [RETURN].
	3. Type RUN (after READY appears on the screen) then [RETURN].

HOW TO RETURN TO THE MAIN MENU:

Press [ESCAPE] key.	Press left arrow key.

COMMAND FUNCTIONS:

1. SPACEBAR moves highlight.	1. F1 key moves highlight.
2. Press [RETURN] to select.	2. Press [RETURN] to select.

CURRICULUM POSSIBILITIES:

SOFTWARE TITLE: Animal Photo Fun

PUBLISHER:
DLM (Developmental Learning Materials)
One DLM Park
Allen, TX 75002

PRICE: $24.75

SUMMARY:

Animal Photo Fun features six different activities to help children identify animals, classify animals by habitats, and strengthen memory skills using music and colorful graphics. Meet the Animals combines visual identification, picture-word correspondence, and classification skills with an animal parade of each of the six different habitats. Odd One Out allows children to help the Photographer sort pictures of animals into habitat groups by identifying which animal doesn't belong. Photo Safari is a timed activity to enhance visual perception and classification skill. The student tries to identify the picture of the animal and its habitat before time runs out to take its picture. Animal Mom Match focuses on visual memory and problem-solving skills to find and match mother and baby animals hidden on six "playing cards" on the screen. Two versions of Animal Rummy are available. In version 1, the child competes with the Photographer to be the first to match three animals from the same habitat. In version 2, two children take turns in playing the game.

INTENDED USE:

Reviewer recommends: K-2

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door. 2. Turn on computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
Press [ESCAPE] key.

COMMAND FUNCTIONS:
1. SPACE BAR or arrow keys select and identify the selection.
2. [RETURN] makes the final selection.
3. During GAME CHOICE screen, [CONTROL] I will turn on or off the instructions before each game or [CONTROL] S will turn on or off the sound.

CURRICULUM POSSIBILITIES:

SOFTWARE TITLE: Creative Play: Problem Solving Activities with the Computer

PUBLISHER: Lawrence Hall of Science
University of California
Berkeley, CA 94720

PRICE: $47.95

SUMMARY:

Creative Play is a series of activities to introduce children, ages eight to eleven, to computers and to some rudimentary problem solving techniques. These activities emphasize logical reasoning, data collection and evaluation, creative thinking, spatial visualization, and pattern identification. They also encourage purposeful and constructive social interactions skills such as cooperation, collaboration, communication, and peer teaching. The disk contains 25 programs and the guide includes detailed ideas for classroom activites and several reproducible activity sheets. The programs included are described as follows:

HANGMAN	Guess a vocabulary word in English
GEORGE	Guess a vocabulary word in Spanish
BIGRED	Write a story based on "Little Red Riding Hood"
PASSWORD	Guess a word from synonym clues
WORDS	Deduce a word from letter clues
SNAP	Recognize and react to words flashed on screen
WFF	Use letters of alphabet in a logic game
GUESS	Guess a secret number from 1 to 100
CUPS	Guess which cup the computer will choose
FUNCTION MACHINE	Try to guess the mathematical rule machine uses
BRIDGES	Try to make the last move in a strategy game
NIM	Try to force opponent to take last pebble in game
STARS	Guess a numer from 1 to 100 using proportionality clues
TICTAC	A coordinate version of tic-tac-toe
HURKLE	Find the Hurkle, guess coordinates with direction clues
MUGWUMP	Find Mugwump, guess coordinates with distance clues
LEM	Land a space capsule on moon, control ship's speed
RACING	Use laws of physics to safely drive car at racetrack
CAVES	Explore cave and find path to air and light
BIRDS1	Investigate geography from bird's perspective
WUMPUS	Find Wumpus in dodecahedron, flee super bats
RATMAZE	Travel through maze to find piece of cheese
MAZE	Run maze several times and record your speed
SYMMETRY	Draw patterns which computer makes symmetrical drawings
CHASE	Run from robots in a strategy game.

INTENDED USE:

Publisher recommends: Ages 8-11
Reviewer recommends: Grades 3-5

HOW TO LOAD

APPLE	COMMODORE
1. Insert disk and close door. 2. Turn on computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
Press [ESCAPE] key.

COMMAND FUNCTIONS:
Follow instructions for each game on the screen.

CURRICULUM POSSIBILITIES:

The publisher suggests:

1. Following a class discussion on what is a computer, what can it do and what can it not do, have the group draw two murals to illustrate what the computer can do and what it cannot do.

2. Use coordinate map activity sheet or local map to have children locate various landmarks by their coordinates.

3. Conduct a treasure hunt where clues are hidden in locations identified by x,y paired coordinates on a treasure map.

4. Create a milk carton computer simulation with four paper cups labeled in, out, bet, guess, and a small package of m&m's for each child and the program to follow on the activity sheet provided.

SOFTWARE TITLE: Discrimination, Attributes, and Rules:
The Second Step in Problem Solving

PUBLISHER: Sunburst Communications, Inc.
39 Washington Ave.
Pleasantville, NY 10570

PRICE: $225 for complete K-6 package; $150 for K-2; $175 for K-4

SUMMARY:

Discrimination, Attributes, and Rules is a complete package of software programs designed to teach cognitive skills required for problem solving and higher-order cognitive skills. They present Discrimination skills in Odd One Out (K-6) and Tip 'n Flip (4-6). Concrete concepts and defined concepts through practice in recognizing changes in attributes, manipulating and sorting by attributes, and using attributes to complete analogies in Teddy's Playground (K-4) and Ten Clues (5-6). Students learn to generalize a rule from examples and non-examples and to create a new example based upon that rule through Iggy's Gnees (K-2); Gnee or Not Gnee (3-4); and High Wire Logic (5-6). The extensive teacher's manual which accompanies the software suggests many activities and contains worksheets and other materials. Although this complete package is only available in Apple version at this time, two of the programs within this package, Odd One Out and Gnee or Not Gnee are available individually for Commodore.

INTENDED USE:

Publisher recommends: K-6
Reviewer recommends: K-6

HOW TO LOAD:

APPLE	COMMODORE
1. Insert program disk into disk drive. 2. Close disk drive door. 3. Turn on computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
Press [CONTROL] and E.

COMMAND FUNCTIONS:
See the teacher's manual for full instructions for each program.

CURRICULUM POSSIBILITIES:
The teacher's manual contains worksheets and other preparatory and extension activities to accompany this software.

SOFTWARE TITLE: Electronic Easel

PUBLISHER: Discovery Discs
C/O John Laffan
146 Cross Street
Middletown, CT 06457

PRICE: $25.00

SUMMARY:

Electronic Easel introduces young children to the microcomputer as a machine with which they can make things happen. They choose which primary colors to put in the paint cans using the 1, 2, and 3 keys. The two colors they select make a secondary color. A drawing screen allows them freedom to create with the colors they have mixed and to explore directions.

INTENDED USE:

Publisher recommends: Ages 4-6
Reviewer recommends: Preschool-second grade

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door. 2. Turn on computer and monitor. 3. Press [RETURN] when title screen appears.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
The Closed APPLE key makes a menu appear.

COMMAND FUNCTIONS:

1. All instructions are given on the screen to mix colors or draw. Press [RETURN] after each decision is made.
2. The Open APPLE key moves the color selector from the black paint can to the color desired with drawing. To erase, return the color selector to the first paint can on the left.
3. C and [RETURN] clears the screen for a new picture.
4. M and [RETURN] returns to the mixing colors area.
5. B and [RETURN] returns to the picture.
6. [CONTROL] T and [RETURN] accesses the teacher's menu where the teacher can save or load stored pictures.

CURRICULUM POSSIBILITIES:

The publisher suggests that traditional activities to explore color and line be used, such as: easel painting, finger painting, mixing colored waters, combining colored cellophane, and dropping food coloring on coffee filters to see the colors blend.

SOFTWARE TITLE: Energy Who?

PUBLISHER:
Center for Environmental Education
226 Wells Hall
Murray State University
Murray, KY 42071

PRICE: $2.00, or send a diskette to request a copy

SUMMARY:

Energy Who? is an animated program to teach young children the different sources of energy: food, fuels, sun, wind, and water. The program begins with a brief description of each type of energy. The instructions are presented on the screen. A picture of a house with solar panels on the roof appears on the screen with a question about the source of the power to heat those panels. The student selects the appropriate picture of the sun from the card placed above the numbers 4 through 8 on the keyboard. When a batter appears, the questions asks what kind of energy makes the batter swing at the ball. No other answer responds except the correct answer, food. The correct answer is rewarded by music ("Take me out to the ballgame") and an animated batter hitting the ball. There are two possible correct answers for objects which are powered by electricity--both fuels and water.

INTENDED USE:

Reviewer recommends: Grades 1-2

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door. 2. Turn on computer and monitor.	Software not available at this time.

COMMAND FUNCTIONS:

The numbers 4 through 8 are used to select an answer. A card provided with the software may be folded to insert behind the numbers in the correct place so that the student may select the icon and word for each of the five kinds of energy: food, fuels, sun, wind, and water.

CURRICULUM POSSIBILITIES:

SOFTWARE TITLE: Exploring Your World: You and Weather

PUBLISHER: Grolier Electronic Publishing
Sherman Turnpike
Danbury, CT 06816

PRICE: $39.95

SUMMARY:
Exploring Your World: You and Weather features two main programs about the human body and weather. All About You provides an opportunity to explore the world of self and family. Three different activities are presented randomly so the child can repeat the activities with different combinations. In the first activiy, children learn to read the names of the parts of the body, and to place these body parts in the correct position to create a complete person. In the second activity, children read and identify names of articles of clothing and then dress a body outline. In the third activity, they can create or dress Mom or Dad. The Weather teaches children to read vocabulary about weather concepts. The students may create weather scenes in the first activity using limitless creativity. Matching weather pictures to vocabulary words is the second activity. In the third activity, children match clothing and clothing words to the appropriate weather scene.

INTENDED USE:
Publisher recommends: Ages 4-7
Reviewer recommends: Grades K-2

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door.	1. Turn on computer system.
	2. Insert disk and close door.
2. Turn on computer and monitor.	3. Type: LOAD "MIND",8,1 then [RETURN].
	4. Type: RUN (after READY appears on the screen) then [RETURN].

HOW TO RETURN TO THE MAIN MENU:

Press the [ESCAPE] key.	Press the F7 key.

COMMAND FUNCTIONS:

1. Use the I, J, K, and M keys.	1. Use the SHIFT key and either of the two arrow keys.
2. The ? key gives a demonstration.	2. The F1 key gives a demonstration.

3. With both Apple and Commodore, use number keys 1, 2, 3, to choose activities; 4 to get instructions.
4. The [RETURN] key enters the response.
5. The SPACE BAR advances the program. This program operates with a joystick or with the keyboard.

CURRICULUM POSSIBILITIES:

SOFTWARE TITLE: The Human Body: An Overview

PUBLISHER:
BrainBank, Inc.
220 Fifth Ave.
New York, NY 10001

PRICE: $90.00

SUMMARY:

The Human Body: An Overview introduces the six major systems of the body, the major functions of each system, and some of the body parts of each system. The two-sided disk contains eight programs: Introduction to the Human Body, The Muscular System, The Digestive System, The Respiratory System, The Skeletal System, The Circulatory System, The Nervous System, and a Review Test.

INTENDED USE:

Publisher recommends: Ages 10 and up
Reviewer recommends: Grade 3 (with teacher supervision using the muscular system and skeletal system only) and up

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door.	1. Turn on computer system.
2. Turn on computer and monitor.	2. Type: LOAD "MENU",8 then [RETURN].
	3. Type: RUN (after READY appears on the screen) then [RETURN].

HOW TO RETURN TO THE MAIN MENU:
This program does not permit re-entry to the main menu before the lesson is completed. To stop, turn off the computer.

COMMAND FUNCTIONS:
The program advances automatically or gives instructions on the screen.

CURRICULUM POSSIBILITIES:

The publisher suggests:

1. Make a bulletin board of the systems of the body. Add drawings of the different parts of each system as more is learned about them.
2. Make drawings of the three kinds of muscle cells.
3. Create a way to test the muscular strength in your legs and arms and keep a record to the findings.
4. Measure the length of the humerus bones of the class and chart the results.

SOFTWARE TITLE: Memory: The First Step in Problem Solving

PUBLISHER: Sunburst Communications, Inc.
39 Washington Ave.
Pleasantville, NY 10570

PRICE: $250 for entire K-6 package; $150 for K-2; $210 for K-4

SUMMARY:

Memory: The First Step in Problem Solving is a complete, curriculum-based package consisting of ten different program disks dealing with memory skills for grades K-6. K-2 programs focus on remembering sequence in three different programs: What is in a Frame?, Teddy and Iggy, and Simon Says..., and offer Concentration with six different matching games. Four programs targeted for grades 3-4 include: First Things First for remembering shapes; Pick the Part and Was it there? Was it missing? for remembering parts of a whole; and Memory Castle for remembering instructions. Two additional programs Self-Testing and Regrouping involve skills at various levels for grade K-6. The extensive teacher's manual which accompanies this software package presents worksheets and other activities materials.

INTENDED USE:
Publisher recommends: K-6
Reviewer recommends: K-6

HOW TO LOAD:

APPLE	COMMODORE
1. Insert program disk into the disk drive. 2. Close door of disk drive. 3. Turn on computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
Press [CONTROL] and E.

COMMAND FUNCTIONS:
See manual for instructions for each program.

CURRICULUM POSSIBILITIES:
The publisher includes numerous activity suggestions in the teacher's manual which accompanies the software.

SOFTWARE TITLE: Mickey's Space Adventure

PUBLISHER:
Sierra On-Line, Inc.
P. O. Box 485
Coursegold, CA 93614

PRICE: $29.96

SUMMARY:

Mickey's Space Adventure reinforces reading comprehension, problem solving, logical thinking, and mapping skills, while teaching interesting facts and concepts about our solar system. This program is designed to teach the names of the planets, the order of the planets from the sun, the concepts of planet rotation and revolution around the sun, the characteristics of many of the planets and moons, the concept of gravity, the relative sizes of the planets, and the general nature of each planet (gaseous or solid). Mickey Mouse and Pluto discover a spaceship from Oron (fictitious planet from a neighboring stellar system). Mickey enters the ship and discovers that it is computer controlled, but that an inhabitant of Earth is needed to find a piece of the shattered memory crystal and bring it back to the ship. Then, he must find each of the 9 pieces, in the correct order, on the other planets in the solar system in order to unite the crystal once again.

INTENDED USE:
Publisher recommends: Ages 8 and up
Reviewer recommends: Grades 3 and up

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door. 2. Turn on the computer and monitor.	1. Turn on computer system. 2. Type: LOAD "MICKEY",8,1 then [RETURN]. 3. Type: RUN (after READY appears on the screen) then [RETURN].

HOW TO RETURN TO THE MAIN MENU:

Press [ESCAPE] key.	Press F1 key.

COMMAND FUNCTIONS:

1. Press the SPACE BAR or use the arrow keys to move through the word options.
2. Press [RETURN] to select the highlighted word.
3. Make selections in the same manner on the second line. Once satisfied with the choices in both lines, press [RETURN] again.
4. To cancel a selection and choose a different option, press [ESCAPE] at any time to start over.
5. Press C to see a list of what you are carrying, if anything.
6. Press S to turn sound off or on again.
7. Press B to back up and read a description of the scene you are viewing.

8. To save a game for return to it at a later time, go to the room in the center of the spaceship. Select the command SAVE GAME. Follow the directions on the screen to format a blank disk and save the game. One game may be saved on each formatted disk.

CURRICULUM POSSIBILITIES:

The publisher suggests:

1. Weigh Out — Calculate your weight on each of the planets Mickey visits by comparing your weight on earth to Mickey's weight on the Planet, divided by his weight on earth (100 pounds). The equation to use is:

$$\frac{\text{Mickey's weight on Planet A}}{100} \text{ X } \begin{matrix}\text{Your weight}\\ \text{on earth}\end{matrix} = \begin{matrix}\text{Your weight}\\ \text{on Planet A}\end{matrix}$$

2. How Old Would You Be... — Figure your own age in years if you were living on each planet. Multiply your age on Earth times the number of days in Earth's year (365) to get your age in Earth days. Divide that by the number of Earth days in the other planet's year. The equation looks like this:

$$\frac{\text{Age in Earth years X 365 days per year}}{\text{88 days per year}} = \begin{matrix}\text{Your Age}\\ \text{on Mercury}\end{matrix}$$

3. The Universe in Miniature — Build a miniature solar system using an imaginary sun, 10 feet in diameter. Place a large marble (Mercury) one foot away from this sun. Place Venus (a golf ball) a little over 2 feet from the sun. Earth (another golf ball) will be 1 yard away from the sun. Mars (a jacks ball) should be 1 1/2 yards from the sun, and Jupiter (a basketball) 5 yards from the sun. Saturn (a soccer ball with rings added, if you wish) is placed 10 yards from the sun, Uranus (a softball) 19 yards from the sun, Neptune (another softball) 30 yards from the sun, and Pluto (a small marble) 40 yards from the sun.

4. As The World Turns — Using a light bulb and a ball, demonstrate the rotation of the earth in relation to the sun. Rotate the ball through a 24-hour day from sunlight, into night, and back into the sunlight again.

5. The Reason for Seasons — Demonstrate the earth's axis tilt and the rotation of earth around the sun using a light bulb to represent the sun, and an orange with a skewer in the middle to represent earth's axis through the North and South Poles. Tilt the North Pole slightly toward the "sun" to show the northern hemisphere in summer and the southern hemisphere in winter. Walk in a circle half way around the light bulb with the orange and its skewer pointed in the same direction to show the northern hemisphere winter. Demonstrate the position of the earth and its axis during spring and fall, also.

6. Junior Explorers — Use compass directions to make a map of the route to a friend's house. Label street and landmarks. Using the map, give your friend compass directions to your house.

7. Invent Your Own Aliens — Using creative thinking and colors, paints, etc, draw pictures of the alien creatures on various planets or moons.

The reviewer recommends:

1. Tie this space adventure in with The Incredible Laboratory software to discover the chemical combinations which might create various alien creatures on the planets. The same skills of note taking, logical thinking, and experimentation are included in that software.

SOFTWARE TITLE: Now Hear This

PUBLISHER: Marshware
P. O. Box 8082
Shawnee Mission, KS 66208

PRICE: $39.95

SUMMARY:

Now Hear This provides a two-part tutorial on sound and the human ear, plus a reference dictionary for unfamiliar terms and a quiz. Students learn about the characteristics of sound waves, the parts of the ear and their functions, and other hearing-related topics such as echoes, sign language, and care of the ears. Colorful graphics illustrate the text and animation and exercises are used to emphasize key concepts in the instruction. Multiple choice questions are asked throughout the lessons.

INTENDED USE:

Publisher recommends: Ages 5-12
Reviewer recommends: Grades 2 and up

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door. 2. Turn on computer and monitor.	

HOW TO RETURN TO THE MAIN MENU:
Press [ESCAPE] key.

COMMAND FUNCTIONS:

1. The back arrow key is used to erase and change responses. [RETURN] enters the student's response.
2. To enter the Teacher Management System, type an Exclamation point (!) when the Main Menu appears on the screen; then press [RETURN]. This permits looking at a student record, erasing the student file, restarting the lesson.

CURRICULUM POSSIBILITIES:

The publisher suggests:

1. Bring a plastic cut-away model of the ear to discuss and examine.
2. Bring musical instruments into the classroom and discuss how the different notes are obtained.
3. Have students do library research on deafness and sound and watch signing on TV.
4. Learn to sign simple phrases such as "Good Morning", "Thank You", etc.
5. Have an audiologist or a person who tests hearing visit the class and describe how ears are tested, and to discuss diseases of the ear.
6. Give students a chance to experiment with sounds on a synthesizer to learn about other factors that affect sounds such as overtones, timber, and envelope.
7. Identify animals with different size ears and how they use their outer ears to pick up sound waves.

SOFTWARE TITLE: Picture Book Fun: Farms and Gardens

PUBLISHER: Discovery Discs
C/O John Laffan
146 Cross Street
Middletown, CT 06457

PRICE: $25.00

SUMMARY:

The Picture Book Fun series presents shapes in a classified form and in limited number to promote meaningful decision making. An index card shows the shapes available. They are selected by numbers, easy for the child to locate. The child can move each object on the screen and decide where it is to be placed. Once an object is fixed in its location, other shapes may be added to the picture in the same manner. The child may then tell an original story about the picture which an adult may type in below the picture, or older children may type their own stories. This provides an innovative creative writing experience for younger children.

Farms and Gardens contains four shape sets: FARM FRIENDS with a girl, a boy, sheep, lamb, pig, piglet, duck, and duckling; MORE FARM FRIENDS with a horse, colt, calf, rooster, and dog; GARDENING with a girl and a boy, a hoe, rake, seeds, sun, and rain cloud; and PLANTS with a seedling, plant, watering can, flower, flowers, carrot, radish, and cabbage.

INTENDED USE:

Publisher recommends: Ages 4-8
Reviewer recommends: Grades K-2

HOW TO LOAD:

APPLE	**COMMODORE**
1. Insert disk and close door.	Software not available at this time.
2. Turn on computer and monitor.	
3. Press [RETURN] when title page appears.	

HOW TO RETURN TO THE MAIN MENU:
Press N for new shape set.

COMMAND FUNCTIONS:

1. Press the number of the shape desired. It will appear in the upper left corner of the screen. Move it with the four arrow keys to the location desired.
2. Press the Closed APPLE key to set the shape at that location.
3. To erase a shape, place an identical shape over it and press the Closed APPLE key.
4. Type C to clear the screen for a new picture.
5. Type N to select a different shape set.
6. Press D to access disk functions such as saving and loading pictures.
7. Press W to write a story to accompany the picture. The story will be written below the picture.

8. Make all corrections, using the left arrow key, before pressing [RETURN] to go on to the next line.
9. The Beep indicates the end of the line. Erase all of any unfinished word and press [RETURN] to go to next line. Type in that word on the next line.
10. When story is finished press the [ESCAPE] key. The screen will ask if you want to save the picture text. Respond with Y or N and [RETURN].

CURRICULUM POSSIBILITIES:

SOFTWARE TITLE: Picture Book Fun: Transportation

PUBLISHER: Discovery Discs
C/O John Laffan
146 Cross Street
Middletown, CT 06457

PRICE: $25.00

SUMMARY:

The Picture Book Fun series presents shapes in a classified form and in limited number to promote meaningful decision making. An index card shows the shapes available. They are selected by numbers, easy for the child to locate. The child can move each object on the screen and decide where it is to be placed. Once an object is fixed in its location, other shapes may be added to the picture in the same manner. The child may then tell an original story about the picture which an adult may type in below the picture, or older children may type their own stories. This provides an innovative creative writing experience for younger children.

Transportation offers two levels. At Level 1 there are 8 different road shapes to make up roadways, plus a car, moving van, police car, motorcycle, dumptruck, bulldozer, gas pump, tree, and traffic light to arrange along the road. Level 2 includes the same 8 road shapes as Level 1, plus four other shape sets: VEHICLES with a truck, car, moving van, station wagon, police car, van, motorcycle, flat bed, and sports car; OTHER VEHICLES with a sailboat, motorboat, balloon, flying carpet, plane, rocket, hovercraft, helicopter, and horse; SIGNS with a stop sign, billboard, traffic light, speed sign, gas pump, yield sign, telephone pole, warning sign, and tree; and CONSTRUCTION with barricade, cone, dump truck, steam roller, crane, trailer, cement mixer, bulldozer, and dirt.

INTENDED USE:
Publisher recommends: Ages 4-8
Reviewer recommends: Grades K-2

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door. 2. Turn on computer and monitor. 3. Press [RETURN] when title page appears.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
Press N for new shape set.

COMMAND FUNCTIONS:

1. Press the number of the shape desired. It will appear in the upper left corner of the screen. Move it with the four arrow keys to the location desired.
2. Press the Closed APPLE key to set the shape at that location.
3. To erase a shape, place an identical shape over it and press the Closed APPLE key.

4. Type C to clear the screen for a new picture.
5. Type N to select a different shape set.
6. Press D to access disk functions such as saving and loading pictures.
7. Press W to write a story to accompany the picture. The story will be written below the picture.
8. Make all corrections, using the left arrow key, before pressing [RETURN] to go on to the next line.
9. The Beep indicates the end of the line. Erase all of any unfinished word and press [RETURN] to go to next line. Type in that word on the next line.
10. When story is finished press the [ESCAPE] key. The screen will ask if you want to save the picture text. Respond with Y or N and [RETURN].

CURRICULUM POSSIBILITIES:

SOFTWARE TITLE: T-rex: The Dinosaur Survival Adventure

PUBLISHER:
CBS Software
One Fawcett Place
Greenwich, CT 06836

PRICE: $37.46

SUMMARY:

T-rex presents a survival game to balance food, energy, health, water, and temperature, plus attacking dinosaurs to keep the Tyrannosaurus rex alive. The dinosaur explores five different environments—savannah, pine woods, marsh, rain forest, and desert in the game. The What If? sections permits changing the conditions of speed, temperature, health, prey, food, and water to see how those changes could affect the T-rex's survival. There are four levels of T-rex. At Level 1 the environments include savannah, marshes, and pine woods, and 4 different enemies. Hints are provided as the game is played. At Level 2, another attacking dinosaur is added and there are no hint messages. Level 3 adds the desert and rain forest environments and temperature and water must be controlled in addition to food, energy, and health. Level 4 adds traps for T-rex to fall into.

INTENDED USE:

Publisher recommends: ages 8-18
Reviewer recommends: grades 2-

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk in drive and close door. 2. Turn on computer and monitor.	Software not available at this time.

COMMAND FUNCTIONS:

1. This program can be used with a joystick or with the keyboard. The joystick will move T-rex or A will make him go up, Z will move down. Action button is either located on the joystick or by using the spacebar on the keyboard.
2. The help button is the ?/ key on the keyboard or button 1 on the joystick.
3. To stop the action for a pause, press [ESC]; when ready to play again, press [ESC] again and resume play.

CURRICULUM POSSIBILITIES:

SOFTWARE TITLE: Weather

PUBLISHER: Little Shaver Software
267 Bel Forest Drive
Belleair Bluffs, FL 33540

PRICE: $30.00

SUMMARY:

This single disk program tells what weather is, what makes the weather, what causes different kinds of weather, and how better to understand the weather. This program features a New Word section with words, accompanied by their phonetic spelling, in sentences with context clues. Further practice with new words is offered in the Vocabulary section where students match words with their meanings in a game format. The Tutorial section contains two lessons which are graphically illustrated and a Final Test over the material covered.

INTENDED USE:

Publisher recommends: Grades 4-7
Reviewer recommends: Grades 3-6

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close the door. 2. Turn on computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
Press [ESCAPE] key.

COMMAND FUNCTIONS:
1. Teacher Management system can be reached by pressing [CONTROL] and L when the main menu is displayed on the screen. When the program asks for the password, type SHAVER and press [RETURN].

CURRICULUM POSSIBILITIES:

SOFTWARE FOR MATHEMATICS

SOFTWARE TITLE: Builder

PUBLISHER: Discovery Discs
c/o John Laffan
146 Cross Street
Middletown, CT 06457

PRICE: $25.00

SUMMARY:

Builder is designed to promote creative thinking and problem solving through the exploration of two-dimensional spatial relationships. The program develops awareness of shape, size, and figure-ground relationships. Children first learn to match the number of the shape on the index card to the number on the keyboard. Then they begin to combine shapes and move into designing abstract and representational figures. There are two levels. Level 1 presents a selection of nine simple shapes first, later the student may add new shape sets: #2 has eight rectangles; #3 has 8 triangles; #4 has 6 circles. Half of each of these additional shape sets are filled, and half outlined. Level 2 eliminates the simple shape selection and offers a simple selection of shapes: #1 has 6 squares; #2 has 8 rectangles, #3 has 8 triangles, and #4 has 6 circles. As in Level 1, half of each shape set is filled, and half outlined.

INTENDED USE:

Publisher recommends: Ages 4-5 with some previous experience with a simple computer drawing program.
Reviewer recommends: K-3

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door.	Software not available at this time.
2. Turn on computer and monitor.	
3. Press [RETURN] when credits appear on screen.	

HOW TO RETURN TO THE MAIN MENU:
Press N to select a new shape set returns to the main menu.

COMMAND FUNCTIONS:

1. The Number keys 1-9 select the shapes on Level 1.
2. The four arrow keys will move the shape up, down, right, and left.
3. Holding down an arrow key will make symbol move continuously.
4. Press the closed APPLE symbol to set the shape in the right place. Listen for the beep to assure that the shape has been set.
5. To erase an unwanted shape, place an identical blinking shape on the image and press the closed APPLE key. The beep indicates that the shape is erased.
6. Press C and [RETURN] to clear the screen to begin a new building project. The screen will display "CLEAR SCREEN (Y/N)". Press Y and [RETURN].
7. D will activate the disk function to save, load, or print a picture.
8. N will return to the main menu where the child may choose a new shape set. Press 2 for rectangles, 3 for triangles, and 4 for circles.

CURRICULUM POSSIBILITIES:

The publisher suggests that three-dimensional activites to explore the properties of size and shape precede the computer experience. Possible activities include: block play, plastic tiles, parquetry blocks, felt board shape creation, and paper shape collages.

SOFTWARE TITLE: Bumble Games

PUBLISHER: The Learning Co.
4370 Alpine Road
Portalo Valley, CA 94025

PRICE: $29.96

SUMMARY:

Bumble Games features six games that teach number lines, number pairs, and graph plotting. Find Your Number gives arrow clues to help the child find the secret number: 0, 1, 2, 3, 4, or 5. Find the Bumble teaches plotting by hiding the Bumble behind a color box. By picking combinations of A, B, C, or D with 0, 1, 2, or 3 and following arrow clues to pick a smaller or larger letter or number, the child can find the Bumble. Butterfly Hunt is similar to Bumble, but the clues tell the child to look to the right, left, up, or down. Visit From Space allows child to find the hidden spaceship at a point where two number lines cross in a graph. Tic Tac Toc is a two-player game on an x-y number grid. Each player takes turns selecting the x,y coordinates to occupy. The player who gets four tokens in a row, vertically, horizontally, or vertically wins the game. Bumble Dots provides dot pictures one dot at a time. If the child correctly identifies the x,y coordinates of that dot, the next dot is shown and a line connects them, until the picture is completed. The program also allows the students to program their own pictures of up to 20 dots for their classmates to play.

INTENDED USE:

Publisher recommends: Ages 4-10.
Reviewer recommends: Grades K-3.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door.	1. Turn on computer system.
2. Turn on computer and monitor.	2. Type: LOAD "TLC",8 then [RETURN].
	3. Type: RUN (after READY appears on the screen) then [RETURN].

HOW TO RETURN TO THE MAIN MENU:

Press [ESCAPE] key.	Press F1 key.

COMMAND FUNCTIONS:

1. Select the number on the main menu for the game you select.
2. Press ? to see the game's instructions.
3. Press SPACE BAR to skip the opening pictures and go directly to the game.
4. Press the delete key to erase your answer. Once you have your answer correct on the screen, press [RETURN] to record that response.

CURRICULUM POSSIBILITIES:

The publisher suggests:

1. Bumble Map Game — On a sheet of paper draw map of Bumble Town. Draw a park, a lake, a house, a spaceport, or whatever else you think Bumble would like in his town. Fold the completed map in half, then fold that in half three more times to turn your map into a 4 x 4 grid. Label the bottom squares A, B, C, D, and the side squares 0, 1, 2, 3. Ask another student to name the coordinates for the location of Bumble's house, the lake, etc. Use a road map of your town or city to locate landmarks you know. Look at a globe to see how locations all over the earth can be described by points on a grid.

2. Color by Code — Make a 3 x 3 color grid with letters and numbers for coordinates. Use these coordinates to show which colors to use to color a picture in a coloring book. See if another student can correctly follow the color code and color the picture correctly. The color grid and the illustration of the coded coloring book picture are included in the program booklet.

3. Secret Message Grid — Using the secret message grid which places each letter of the alphabet on a point on a 5x5 grid, write a message to a friend using the number pair on the grid for each letter of the message. Give your friend the message to decode.

SOFTWARE TITLE: Counters: An Action Approach to Counting and Arithmetic

PUBLISHER:
Sunburst Communications
39 Washington Ave.
Pleasantville, NY 10570

PRICE: $59.00

SUMMARY:

Counters is a colorful animated program for counting, addition, and subtraction to help students gain a basic understanding of mathematics, not just learn numbers by rote. The program offers five levels of Counting, four levels of Addition, and two levels of Subtraction. Counting, addition, and subtraction is offered both with objects and with numerals in the various levels.

INTENDED USE:

Publisher recommends: Preschool - 1
Reviewer recommends: Preschool - 1

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk into disk drive. 2. Close door on disk drive. 3. Turn on computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:

Press [CONTROL] and E.

COMMAND FUNCTIONS:

1. To count objects, students may press the SPACEBAR the number of times required or press the correct numeral key.
2. [RETURN] registers the answer.

CURRICULUM POSSIBILITIES:

The publisher offers several supplemental activities for this software in the teacher's manual which accompanies the software.

SOFTWARE TITLE: Easy Graph

PUBLISHER: Grolier Electronic Publishing
Sherman Turnpike
Danbury, CT 06816

PRICE: $39.95

SUMMARY:

Easy Graph teaches how graphs and charts are made. The program contains four parts. In the *Introduction*, the program tells what graphing is and shows how information looks when it is put into each of the three different kinds of graphs — pictographs, bar graphs, and pie charts. The second part, *Learn to Use Easy Graph*, teaches how to make and read graphs, and how to understand the purpose of each of the three kinds of graphs in the program. *Practice Using Easy Graph* allows students to practice making each of the kinds of graphs using the data contained on the program disk: population of the states; diameters of the planets; areas of the Great Lakes; population of Canadian provinces and territories. In *Create Your Own Graphs* students may enter their own information and create and print graphs from that information.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door.	1. Turn on computer system. 2. Type: LOAD "BOOT",8 then [RETURN].
2. Turn on computer and monitor.	3. Type: RUN (after READY appears on the screen) then [RETURN].

HOW TO RETURN TO THE MAIN MENU:

Press [ESCAPE] key.	Press the F1 key.

COMMAND FUNCTIONS:

1. Type numbers only, without commas.
2. Use reverse arrow key or [DELETE] to erase.
3. Press SPACE BAR to go on to the next screen.
4. Press [RETURN] to enter a response.

CURRICULUM POSSIBILITIES:

The publisher suggests using Easy Graph to make a pie chart of monthly family expenses, of hours involved in various weekly activities, a bar graph of your school team compared to others, to illustrate a school survey the class conducts, to show the most borrowed books in the school library, or to show weight loss, or improvement in grades.

SOFTWARE TITLE: Money! Money!

PUBLISHER: Hartley Courseware
Dimondale, MI 48821

PRICE: $39.95

SUMMARY:

Money! Money! provides 15 lessons which vary in difficulty from first to fifth grade level. Once the real coins and bills have been introduced to the students, they may use this program to gain more practice in counting money, determining if (s)he has enough money to buy an item, determining the best amount to use to pay for the item, and counting change to see if it is correct. The program provides a "mini-authoring" system to allow teachers to develop additional lessons.

INTENDED USE:

Publisher recommends: Grades 1-5
Reviewer recommends: Grades 1-5

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door. 2. Turn on computer and monitor. 3. CAPS LOCK key should be down.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:
Press [ESCAPE] key twice.

COMMAND FUNCTIONS:

1. When the screen asks which lesson the students wants to work on, the student needs to type the lesson name and number, from M1 through M15 and press [RETURN].
2. Teachers may access the Teacher's MENU by typing MENU when the screen asks for the student's name. The teacher may then create a new lesson, change an existing lesson, delete a lesson, or check student planning.
3. Detailed instructions are provided to create and change a lesson, including how to produce the graphics of coins and bills for the new lessons.

CURRICULUM POSSIBILITIES:

SOFTWARE TITLE: My Very Own Calendar

PUBLISHER: Learning Well
200 South Service Road
Roslyn Heights, NY 11577

PRICE: 42.46

SUMMARY:

My Very Own Calendar features two parts: The Sequence Game and The Calendar Game. The Sequence Game uses drill and practice in a game format to learn the sequence of the days of the week and the months of the year. The Calendar Game allows students to fill in and create their own calendars. It may be used by individuals or groups of children together. Students may explore using the built-in perpetual calendar, the built-in holiday finder, and the picture graphics to record weather, special events, and holidays on their calendars. The calendars may be printed out for display and continued use in the classroom.

INTENDED USE:

Reviewer recommends: Grades 2-4

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door. 2. Turn on computer and monitor.	Software not available at this time.

HOW TO RETURN TO THE MAIN MENU:

1. Highlight the "BYE" box and press [RETURN].
2. Type R to return to the main menu from the utilities section.

COMMAND FUNCTIONS:

1. [CONTROL] O to turn off or on the sound.
2. The SPACE BAR highlights your choice; then press [RETURN].
3. The left and right arrow keys move from day to day and highlight it.
4. The Utilities allows you to set up 25 individual calendars by entering names on the roster. Scores, as well as weather and special events may then be saved. This also sets up the printer. To access Utilities, press [CONTROL] and T when the main menu screen appears at the beginning of the program. The CAPS LOCK must be down.
5. Within the Utilities, type P for performance summary; N to create a roster; S to set scores to zero; C to change a calendar; G to change sequencing of the game; and K to set up the printer.

CURRICULUM POSSIBILITIES:

The publisher suggests:

1. Science Experiments — Compare the time needed for growth of a tomato seed and a pea seed. Use the calendar program to keep a record of when each seed first sprouts, first reaches the seedling stage, and adult

plant stage, flowers, and bears fruit.

2. Weather Predictions — Put a barometer in the classroom and enter the pressure reading and the actual weather in the special events sections of each day on the calendar program. After studying the pressure and weather for two weeks, have students predict weather based on the atmospheric pressure changes.

3. Reinforce Mathematics — How many days until the end of the month, Christmas, etc? How many months until July? How many Tuesdays in December? How many days until spring vacation?

4. Social Studies — use the perpetual calendar to find out on what day of the week certain historic events took place. What day did Columbus land in America? What day were you born? What day did the astronauts land on the moon? Set the calendar back to 1402, for example, and have children determine which holidays were not in existence at that time.

5. Organization and Planning — Enter the page number for a week's math or reading assignments in the special events section of the calendar program. Each day, have the children find out what their assignment is from the calendar.

SOFTWARE TITLE: Odd One Out

PUBLISHER: Sunburst Communications
39 Washington Ave.
Pleasantville, NY 10570
1-800-431-1934

PRICE: $59.00

SUMMARY:

Odd One Out is a program to teach discrimination, attributes and rules, and cognitive control strategies of teacher-made sets of problems. The student selects which item of four presented is the "odd one out". Pictures involves simple discrimination or classification while looking for similarities and differences in objects belonging to the same group or class. The Pictures program cannot be created or edited by the teacher, but three levels of difficulty are provided. The teacher-made problems may involve any of four areas: letters, numbers, words, and math problems. Up to ten different games or sets of problems may be saved for each of the four sections. On the Commodore, twenty games can be saved for each section. Only the Pictures section can be used with students without teacher-made problems being saved on the disk. The problems given initially on the Odd One Out disk are a mixture of K-6 problems to serve as examples for the types of problems which can be created by the teacher. To use Letters, Numbers, Words, or Math sections, the teacher must input problem sets for the students. The extensive teacher guide outlines the possible kinds of problems and the details of how to create the games.

INTENDED USE:

Publisher recommends: Grades K-6, depending on the problems created by the teacher
Reviewer recommends: same as above.

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door.	1. Turn on computer system.
	2. Type: LOAD "*",8 then [RETURN].
2. Turn on computer and monitor.	3. Type: RUN (after READY appears on screen) then [RETURN.

HOW TO RETURN TO THE MAIN MENU:

[CONTROL] E.	[CONTROL] E.

COMMAND FUNCTIONS:

1. Pictures — Type P for Purple, B for Blue, G for Green, and O for Orange to select which color box surrounds the odd picture.
2. Change Options Menu is accessed by holding down the [CONTROL] key (or the Commodore Key) while typing T when the Main Menu is being displayed. S turns off or on the sound; T changes monitor type from color to black and

white; I selects either keyboard or touch window; the numbers 1-4 take you to an editing menu for the section selected where you can set the game for the students, create a new game, edit an existing game, and delete an existing game. The write-protect sticker must be removed before creating or editing any games.

CURRICULUM POSSIBILITIES:

The publisher recommends:

1. Letters — create problems to practice single-letter discrimination, to recognize upper and lowercase letters, to practice alphabetical order, or to identify vowels and consonants.

2. Numbers — make up problems to practice simple number discrimination, to identify odd and even numbers, or to practice counting and recognizing numbers in order; in skip order; those divisible by 3 or multiples of 2, for example.

3. Words — a variety of games are possible to analyze words from the simplest recognition of a combination of letters to form words, to associate words as composites of letters, to identify words as belonging to a specific group, to provide practice in recognizing correct spelling, to emphasize terms in a given subject area, parts of speech, homonyms, synonyms, etc.

4. Math — to help students identify same operation; equivalent sums, differences, products, and quotients; true or false equations, perfect squares, prime numbers, multiples of ten, divisible by same number; equivalent fractions, decimals, or percentages.

SOFTWARE TITLE: Piece of Cake Math

PUBLISHER:
Springboard Software
7807 Creekridge Circle
Minneapolis, MN 55435

PRICE: $26.20

SUMMARY:

Piece of Cake Math features five games to develop speed and accuracy in recalling math facts. A magical Bakery provides a fun way to learn to add, subtract, multiply, and divide. The Bakery allows students to visualize addition and subtraction word problems and translate these problems into symbolic problems. Multicake features multiplication word problems and Dividacake division word problems. Flashcards offers multiple skill levels to develop skills with addition, subtraction, multiplication, and division. It also develops carrying, borrowing, and problem solving strategies at advanced levels. Catchacake test speed recall and accuracy with addition, subtraction, multiplication, or division.

INTENDED USE:
Publisher recommends: Ages 7-13
Reviewer recommends: Grades 1-4

HOW TO LOAD:

APPLE	COMMODORE
1. Insert disk and close door.	1. Turn on computer system.
2. Turn on computer and monitor.	2. Type: LOAD "*",8 then [RETURN].
	3. Type: RUN (after READY appears on the screen) then [RETURN].

HOW TO RETURN TO THE MAIN MENU:

Press [ESCAPE] key.	Press any of the F function keys.

COMMAND FUNCTIONS:
1. Any key will select the picture of the game which appears on the screen.
2. [CONTROL] S turns the sounds off or on in the APPLE. Adjust the sound on the Commodore monitor.
3. [CONTROL] W while the picture menu is running will produce a word menu.
4. The difficulty is adjusted automatically by the program according to the child's ability, but [CONTROL] J will produce the next level of difficulty. When you have reached the highest level of difficulty, the [CTRL] J command will be ignored.

CURRICULUM POSSIBILITIES:
The publisher suggests that you play a real life version of "multicake" by cutting up a cake, brownies, or slicing bread.

CURRICULUM GOALS AND OBJECTIVES

This section provides a list of goals and objectives for the integration of computer learning experiences into the mathematics and science subject areas. Teachers should remain aware of the fact that the integration of the computer into the curriculum is planned to accomplish four purposes:

1. introduction of information and concepts
2. reinforcement of information and concepts
3. enhancement of information and concepts
4. extension of information and concepts

The fourth purpose entails the most powerful and unique use of the microcomputer. Application of the computer as an instructional tool should focus on all four purposes, but the fourth area should be consistently emphasized. This approach will insure that the computer is used as a tool along with current instructional strategies. A major benefit of computer use is to serve as a medium or process to promote the development of problem solving ability. This can be insured through subject matter integration and extension of understanding, application, and exploration of knowledge through routine computer use.

BASIC SKILLS FIRST

The State Department of Education has determined that curriculum frameworks for Tennessee schools will be organized by subject areas. Based upon the Basic Skills First Curriculum Guides, the SPIN Project has organized a listing of software to parallel the goals and strands presented in the kindergarten through third grade guides. The software listed in this section can be used to introduce, reinforce, enhance or extend the skills and concepts to be learned.

SCIENCE - KINDERGARTEN

SUBJECT AREA: Physical Science

GOAL: 05100 Developing an awareness of the physical world

STRANDS:
Machines and Work
Electricity and Magnetism
Sound, Heat, and Light

RELATED SOFTWARE: Creative Contraptions

SCIENCE - KINDERGARTEN

SUBJECT AREA: Life Science

GOAL: 05200 Understanding characteristics of living things

STRANDS:
Animals
Plants
Human Body
Growth and Development

RELATED SOFTWARE:
Animal Kingdom
Picture Book Fun: Farms and Gardens
Picture Book Fun: Pond, Pets, and Chicks
You and Weather

SCIENCE - KINDERGARTEN

SUBJECT AREA: Earth and Space Science

GOAL: 05300 Understanding factors which help make earth a suitable home for living things

STRANDS:
Astronomy
Meteorology

RELATED SOFTWARE:

SCIENCE - KINDERGARTEN

SUBJECT AREA: Environmental Science

GOAL: 05400 Understanding the importance of wise use of the environment

STRANDS: Man's Effect on the Earth
Energy and the Environment

RELATED SOFTWARE: Picture Book Fun: Farms and Gardens
Exploring Your World: You and Weather
Weather

SCIENCE - GRADE 1

SUBJECT AREA: Physical Science

GOAL: 15100 Understanding the impact of major influences in the physical world

STRANDS: Machines and Work
Sound, Heat, and Light
Matter and Energy

RELATED SOFTWARE: Creative Contraptions

SCIENCE - GRADE 1

SUBJECT AREA: Life Science

GOAL: 15200 Understanding plants and animals as living things

STRANDS: Animals
Plants
Human Body
Growth and Development

RELATED SOFTWARE: Animal Kingdom
Animal Photo Fun
Fantastic Animals

SCIENCE - GRADE 1

SUBJECT AREA: Earth and Space Science

GOAL: 15300 Understanding basic concepts in astronomy and geology

STRANDS: Astronomy
Geology

RELATED SOFTWARE:

SCIENCE - GRADE 1

SUBJECT AREA: Environmental Science

GOAL: 15400 Understanding the importance of living and non-living things in the environment

STRANDS: Energy and the Environment
Man's Effect on the Earth
Ecosystems

RELATED SOFTWARE: Energy Who?
Exploring Your World: You and Weather
Weather

SCIENCE - GRADE 2

SUBJECT AREA: Physical Science

GOAL: 25100 Understanding the presence and significance of magnetism, electricity, sound, heat, and light in the physical world

STRANDS: Electricity and Magnetism
Sound, Heat, and Light

RELATED SOFTWARE: Creative Contraptions
Now Hear This

SCIENCE - GRADE 2

SUBJECT AREA: Life Science

GOAL: 25200 Understanding the diversity in the plant and animal kingdoms

STRANDS:
Animals
Plants
Growth and Development

RELATED SOFTWARE:
Animal Kingdom
Animal Photo Fun
Bones and Muscles
Fantastic Animals
Picture Book Fun: Pond, Pets, and Chicks

SCIENCE - GRADE 2

SUBJECT AREA: Earth and Space Science

GOAL: 25300 Understanding the importance of various factors in the areas of astronomy, meteorology, and geology

STRANDS:
Astronomy
Meteorology
Geology

RELATED SOFTWARE:

SCIENCE - GRADE 2

SUBJECT AREA: Environmental Science

GOAL: 25400 Understanding human dependence upon and responsibility to the environment

STRANDS:
Energy and the Environment
Energy Who?
Man's effect on the Earth
Ecosystems

RELATED SOFTWARE:
Animal Kingdom
Exploring Your World: You and Weather
Picture Book Fun: Farms and Gardens
T-Rex
Weather

SCIENCE - GRADE 3

SUBJECT AREA: Physical Science

GOAL: 35100 Understanding sources, forms, and uses of energy

STRANDS:
Machines and Work
Electricity and Magnetism
Matter and Energy

RELATED SOFTWARE: Creative Contraptions

SCIENCE - GRADE 3

SUBJECT AREA: Life Science

GOAL: 35200 Understanding factors and functions involved in the growth and development of animals, plants, and human beings

STRANDS:
Animals
Plants
Human Body
Human Being

RELATED SOFTWARE:
Bones and Muscles
The Human Body: An Overview
Now Hear This

SCIENCE - GRADE 3

SUBJECT AREA: Earth and Space Science

GOAL: 35300 Understanding the make-up of the solar system, clouds, and soil

STRANDS: Astronomy
Meterology
Geology

RELATED SOFTWARE: Mickey's Space Adventure

SCIENCE - GRADE 3

SUBJECT AREA: Environmental Science

GOAL: 35400 Understanding the effect of environmental changes on living things

STRANDS: Energy and the Environment
Man's effect on the Earth
Ecosystems

RELATED SOFTWARE: Animal Kingdom
Exploring Your World: You and Weather
Incredible Laboratory
Picture Book Fun: Farms and Gardens
Picture Book Fun: Pond, Pets, and Chicks
T-Rex

GENERAL PROBLEM SOLVING

Creactive Contraptions
Creative Play
Discrimination, Attributes, and Rules: The Second Step in Problem Solving
Estimation
Incredible Laboratory
Memory: The First Step in Problem Solving
Mickey's Space Adventure

MATHEMATICS - KINDERGARTEN

GOAL: 01100 Understanding and using the number system

STRANDS: Numeration
Operations
Fractions and Decimals

RELATED SOFTWARE: Counters
Early Games
Fay, That Math Woman
Stickybear Numbers

MATHEMATICS - KINDERGARTEN

GOAL: 01200 Understanding and using measurement, geometry and graphs

STRANDS: Graphing, Probability and Statistics
Measurement
Geometry

RELATED SOFTWARE: Builder
Bumble Games
Early Games
Estimation
Patterns and Sequences
Stickybear Shapes

MATHEMATICS - KINDERGARTEN

GOAL: 01300 Understanding problem solving and using problem solving strategies

STRAND: Problem Solving and Applications

RELATED SOFTWARE: Builder
Discrimination, Attributes, and Rules: The Second Step to Problem Solving
Memory: The First Step To Problem Solving
Odd One Out
Size and Logic
Stickers
Stickybear Opposites
Stickybear Shapes

MATHEMATICS - GRADE 1

GOAL: 11100 Understanding and using the number system

STRANDS: Numeration
Operations
Fractions and Decimals

RELATED SOFTWARE: Challenge Math
Counters
Fay: That Math Woman

MATHEMATICS - GRADE 1

GOAL: 11200 Understanding and using measurement, geometry and graphs

STRANDS: Graphing, Probability and Statistics
Measurement
Geometry

RELATED SOFTWARE: Bumble Games
Estimation
Fay: That Math Woman
My Very Own Calendar

MATHEMATICS - GRADE 1

GOAL: 11300 Understanding problem solving and using problem solving strategies

STRAND: Problem Solving and Applications

RELATED SOFTWARE: Builder
Bumble Games
Discrimination, Attributes, and Rules
Estimation
Memory: The First Step in Problem Solving
Money! Money!
My Very Own Calendar
Odd One Out
Size and Logic
Stickers

MATHEMATICS - GRADE 2

GOAL: 21100 Understanding and using the number system

STRANDS: Numeration
Operations
Fractions and Decimals

RELATED SOFTWARE: Challenge Math
Fay: That Math Woman
Piece of Cake Math

MATHEMATICS - GRADE 2

GOAL: 21200 Understanding and using measurement, geometry and graphs

STRANDS: Graphing, Probability and Statistics
Measurement
Geometry

RELATED SOFTWARE: Builder
Bumble Games
Easy Graph

MATHEMATICS - GRADE 2

GOAL: 21300 Understanding problem solving and using problem solving strategies

STRAND: Problem Solving and Applications

RELATED SOFTWARE: Builder
Bumble Games
Discrimination, Attributes, and Rules
Memory: The First Step in Problem Solving
Money! Money!
Odd One Out

MATHEMATICS - GRADE 3

GOAL: 31100 Understanding and using the number system

STRANDS: Numeration
Operations
Fractions and Decimals
Graphing, Probability and Statistics

RELATED SOFTWARE: Challenge Math
Fay: That Math Woman
Fraction Factory
Piece of Cake Math

MATHEMATICS - GRADE 3

GOAL: 31200 Understanding and using measurement, geometry and graphs

STRANDS: Measurement
Geometry

RELATED SOFTWARE: Builder
Easy Graph
Stickers

MATHEMATICS - GRADE 3

GOAL: 31300 Understanding problem solving strategies

STRAND: Problem Solving and applications

RELATED SOFTWARE: Challenge Math
Discrimination, Attributes, and Rules
Memory: The First Step in Problem Solving
Money! Money!
Odd One Out

BASIC SKILLS AND COMPUTER LEARNING

Basic skills are germane to all knowledge acquisition. They are the same for mathematics, science and computer learning. Teachers should keep the following ideas in mind when using the computer as an instructional tool.

> Basic skills are fundamental abilities acquired by the child which help him or her to use knowledge more effectively.
>
> Content is the essential body of information contained in a field of study or subject matter.
>
> Basic skills include:
>
> > Observation - finding, locating, investigating, interpreting, predicting, estimating, and problem solving
> >
> > Communication - listening, recalling, telling, describing, expaining, discussing, inferring, and summarizing
> >
> > Comprehension - recognizing, identifying, naming, labeling, and defining
> >
> > Classification - associating, differentiating, contrasting, comparing, matching, sorting, and identifying characteristics
> >
> > Sequencing - following a series, ordering, counting, measuring, patterning, relating
> >
> > Writing - drawing, marking, tracing, copying, and reproducing

Care should be taken in the use of computers to incorporate basic skill instruction within computer learning experiences as well as across subject matter areas. Within this approach the teacher should:

1. focus on the child's way of learning and not just content mastery to encourage motivation and content interest
2. select software based on subject area skills and present these through activities that incorporate basic skill mastery
3. provide manipulative experiences to accompany software to facilitate basic skill acquisition
4. use familiar content with new content by incorporating challenging software to encourage content and basic skill mastery

5. discuss the computer activities to assist the child in analyzing, associating, and summarizing the information

6. focus on the process the child is using to explore computer learning experiences as opposed to a specific solution or product when the experience is inquiry-oriented

The teacher's role is to facilitate the child's acquisition of basic skills by mediating the learning process through experiences and discussion. Mathematics, science, and computer learning interest skills and concepts are closely associated with the mastery of the basic skills.